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Bibliography on Atomic Transition Probabilities

United States Department of Commerce

National Bureau of Standards

Miscellaneous Publication 278

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Bibliography on Atomic Transition Probabilities

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Institute for Basic Standards
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Bibliography on Atomic Transition Probabilities[1]

B. M. Glennon and W. L. Wiese

A revised and updated bibliography on atomic transition probabilities is presented. The papers are arranged according to elements and stages of ionization, and the method employed and class of transitions are indicated behind each reference. Only articles on discrete transitions, both permitted and forbidden, are listed. Also included is a supplementary list of important papers dealing with transition probabilities from a general point of view, and a table of comprehensive papers not included in the element list.

Key Words: Atomic, discrete, forbidden, permitted, transition probability

1. Introduction

Since the publication of our first "Bibliography on Atomic Transition Probabilities" in June 1962 (NBS Monograph 50) the number of articles containing numerical data on these quantities has increased by about 50 percent, from 600 listed in the first edition to more than 900 included in this updated bibliography. In view of this large increase we have decided to present a revised bibliography arranged in the same way as the first rather than to issue any further separate addenda. The new bibliography includes all papers received before January 1966.

1.1. Background and Scope of this Collection

In June 1960, a data center on atomic transition probabilities was established in the Atomic Physics Division of the National Bureau of Standards. The objectives of the center are to collect and catalog all relevant literature, to extract and analyze the numerical data, and to prepare and publish bibliographies and tables of "best" values.

The collection of literature on transition probabilities was started by utilizing some recent survey articles. Branching out from these, all references and footnotes in the literature were scanned. Simultaneously, several abstracting journals were searched backwards through the year 1950 so that a complete overlap with the available compilations was insured. Two card files ordered to authors and elements were established, and reprints of the articles were collected and cataloged. This data collection is continuously updated by monitoring the current literature, including several abstracting journals.

A large percentage of the articles is in languages other than English. On the initiative of the data center, translations have been made whenever the language skills of the data center group did not suffice for a critical evaluation. The most significant outgrowth of this activity are two books which contain essentially all the Russian work up to 1962 that has not been translated elsewhere. These collections are:

1. "Optical Transition Probabilities" 1924–1960 (National Science Foundation, Washington, D.C., and Department of Commerce, by the Israel Program for Scientific Translations, Jerusalem, 1962).
2. "Optical Transition Probabilities" 1932–1962 (National Science Foundation, Washington, D.C., and Department of Commerce, by the Israel Program for Scientific Translations, Jerusalem, 1963).

As in the first edition, emphasis of this bibliography was laid on a complete presentation of the literature without regard to the quality of the article or to the application. Therefore, all of the early work was included. In many instances this is superseded by more refined determinations, but in cases where nothing else is available this older material may still be very valuable for applications where a rough estimate will do. However, it should be noted, that abstracts of talks are not quoted if the same results appear also in a more widely circulated journal article.

The bibliography is restricted to atomic and ionic transition probabilities of discrete transitions, including permitted (electric dipole) as well as forbidden (magnetic dipole, electric quadrupole) lines.

1.2. Availability of Atomic Transition Probabilities

From this compilation it may be seen that for a few of the 92 natural elements no material is available. For many other elements data exist only for the neutral atom and the first stage of ionization. Furthermore, the number of transitions treated is often quite small, and sometimes only the transition probabilities for the resonance line or for forbidden lines are available.

Fortunately, the available literature is supplemented by a few general treatments. These comprehensive articles are not included in the element list in order to keep the size of this compilation compact. Instead, they are referenced in table 1,

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[1] This research is a part of project DEFENDER, sponsored by the Advanced Research Projects Agency, Department of Defense, through the Office of Naval Research.

and arranged according to various elements and stages of ionization.

Because of their importance brief reviews of these general approaches are given below:

a. The Coulomb Approximation by D. R. Bates and A. Damgaard

Bates and Damgaard (Phil. Trans. Roy. Soc. London, Ser. A, **242,** 101, 1949) have shown that the main contribution to the transition integral comes from a region in which the departure of the potential of an atom or ion from its asymptotic form is so small that it may be replaced by the latter. This enables them to derive a general analytical expression for the transition integral and to compile tables (for *s–p*, *p–d*, *d–f* transitions). From these the transition probabilities for any atom or ion can immediately be calculated, provided that the lower and upper energy levels of the transitions are known (for certain other restrictions see their article). Comparison of this method with other theoretical and experimental results shows that for simple atoms, i.e., those with one electron outside closed shells, the agreement is very good (with deviations usually smaller than 10 percent). Also, for many of the somewhat more complex atomic systems, especially in lighter elements, fair agreement is obtained, often within 25 percent.

Following the development of the Coulomb approximation, a number of publications, especially in the astrophysical literature, contained numerical evaluations of a few transition probabilities using this method. Of these, only a few articles that contain larger amounts of calculated values (more than 10 lines per stage of ionization) are included in this compilation. In addition, the material from a comprehensive tabulation of Coulomb oscillator strengths in "Plasma Spectroscopy," by H. R. Griem, (McGraw-Hill Book Co., New York, 1964) is referenced in table 1, column 4.

b. The Screening Approximation by D. Layzer and C. M. Varsavsky

This theoretical approach was recently developed by D. Layzer (Ann. Phys. **8,** 271, 1959) and applied to a large number of transitions by C. M. Varsavsky (Thesis, Harvard, 1958; and Astrophys. J. Suppl. Ser. **6,** No. 53, 75–108, 1961); and A.M. Naqvi and G. A. Victor (Technical Documentary Report No. RTD TDR–63–3118 (1964), obtainable through the Defense Documentation Center, Cameron Station, Alexandria, Virginia). The method makes use of wave functions expanded explicitly in powers of the nuclear charge; consequently it is especially suitable for the simultaneous treatment of all elements in an isoelectronic sequence. In its simplest form, the approximation is based on screened hydrogenic functions. The results do not always agree well with values obtained from other methods; however, further refinements of the theory are in progress. All elements treated in Varsavsky's second, more comprehensive paper (1961) and in Naqvi and Victor's report are listed in columns 5 and 6 of table 1. In the former article all transition probabilities are for lines in the vacuum ultraviolet.

c. "Experimental Transition Probabilities for Spectral Lines of Seventy Elements" by C. H. Corliss and W. R. Bozman (National Bureau of Standards Monograph 53, 1962.)

In 1961 Meggers, Corliss, and Scribner published tables of spectral line intensities for 39,000 lines of 70 elements in the wavelength range from 2000–9000Å.[2] They determined the intensities photographically from the spectra emitted by a free-burning d-c arc with copper electrodes, into which 0.1 atomic percent of each element was mixed. In this way approximately uniform conditions for all elements were obtained. The temperature of the arc was determined by comparing the measured intensities with known relative *f*-values. This could be done for 20 different elements and good agreement was obtained, indicating the general consistency of the data. The derived *f*-values have been published in the NBS Monograph 53, "Experimental Transition Probabilities for Spectral Lines of Seventy Elements," by C. H. Corliss and W. R. Bozman. Later Allen and Corliss (Monthly Notices Roy. Astron. Soc. **126,** 37 (1963)) recommended, on the basis of a comparison with *f*-sum rules, that the absolute scale should be corrected by a factor of 0.89. A number of comparisons with other available data have shown that for the elements of the iron group generally good agreement is obtained, while large discrepancies, up to factors of 10, have been found for the alkalis and alkaline earths and the lighter elements. Thus some caution in the application of these data is advisable, in particular for the element groups mentioned last. The availability of the material is indicated in table 1, column 7.

d. An Expansion Method by R. J. S. Crossley and A. Dalgarno

Using an expansion in inverse powers of the nuclear charge Z, R. J. S. Crossley and A. Dalgarno (Proc. Roy. Soc. London A**286,** 510, 1965) have calculated parameters for obtaining dipole line strengths for the sodium and magnesium sequences. Their values should supersede Varsavsky's screening approximation values since Crossley & Dalgarno have taken into account the mixing of degenerate configurations. However, the individual ions of the sodium and magnesium sequences have not been listed in table 1, column 8 because for many of the higher ions wavelengths and energy levels are not available as yet.

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[2] "Tables of Spectral Line Intensities," by W. F. Meggers, C. H. Corliss and B. F. Scribner, National Bureau of Standards Monograph 32, October 1961.

e. Four Comprehensive Papers on Forbidden Lines

Among the many papers on calculations of *f*-values for forbidden lines are four that treat a large number of atoms and ions in which certain configurations occur. They are listed in table 1, column 9 (A. M. Naqvi, Thesis Harvard, 1951), column 10 (S. Pasternack, Astrophys. J. **92**, 129, 1940) and column 11 (R. H. Garstang, J. Research Nat. Bur. Standards **68A**, 61, 1964), and column 12 (J. M. Malville and R. A. Berger, Planetary and Space Science **13**, 1131, 1965).

1.3. Arrangement of the Bibliography

The bibliography is divided into two parts. The first part (sec. 3.1) contains important papers which deal with the subject of atomic transition probabilities from a general point of view. The articles are arranged according to the following subjects:

A. Tables of numerical values
B. Previous literature compilations
C. Review articles
D. Fundamental relationships and basic concepts
E. Detailed descriptions of experimental or theoretical methods
F. General comments
G. Environmental influences on transition probabilities.

Short explanatory remarks are given whenever it was felt necessary. In the second part all literature containing numerical values on the individual elements is compiled except the comprehensive articles listed in table 1. It is arranged according to elements, these being listed in alphabetical order by their chemical symbol. Within the elements, the degrees of ionization serve as subdivisions, and the papers are listed in chronological order. Thus, for looking up *f*-value literature one should preferably start from the end of the list and work backward when the more recent work is exhausted. One should also check material available from the comprehensive papers listed in table 1.

For the abbreviations of the journals the designations in the "List of Periodicals" of Chemical Abstracts (1956 and Supplements) have been adopted and should be consulted when in doubt. For convenience, a list of abbreviations for the lesser known journals encountered here is attached at the end of this collection. Particular attention should be given to the apparent differences in the designation of some Russian journals. For instance, articles from the "Zhurnal Eksperimental 'noi i Theoreticheskoi Fiziki" available only in the Russian language are listed as "Zhur. Eksptl. i Teoret. Fiz." If they have been or are being translated privately for the data center, the word "translated" is added in parentheses (transl.). Russian articles translated in the above mentioned books "Optical Transition Probabilities" are marked O.T.P. 1 or O.T.P. 2. When Russian literature has been translated by the American Institute of Physics and other institutions, the translated versions are quoted. For this example the abbreviation is "Soviet Phys.—JETP".

Under the column "classification" each article is characterized by one or more code words which indicate the method being used and the class of transitions being investigated, i.e., permitted-electric dipole-lines (nothing added) or forbidden-electric quadrupole, magnetic dipole-lines ("forb.") added. The word relative ("rel.") appears in all cases where only relative transition probabilities are given. Explanations for the code words are given in table 2.

1.4. Future Plans

Our intention is to publish additions or revised editions of this bibliography whenever significant amounts of new literature are accumulated. The ultimate goal of the data center is the publication of critical tables containing "best" numerical values of transition probabilities. Work on this project is in progress, and the material on the lightest 10 elements has been evaluated and is available in "NSRDS-Natl. Bur. Stds. 4, Vol. I (1966)." However, the preparation of numerical data for all elements must be considered as a long-range program because of the enormous amount of work involved. It is our hope that in the meantime the present bibliography may be of assistance to all interested scientists.

We express our thanks to Mrs. Gloria Rotter, who has typed and helped arrange all the references appearing in the bibliography.

1.5 *Table 1.* Contents of comprehensive papers (not included in the element list)

Element	Sym-bol	Z	Stages of Ionization [1]								
			Griem [2] (Coulomb approxima-tion)	Varsavsky [3] (Vacuum u.v. lines)	Naqvi & Victor [4]	Corliss & Bozman [5]	Crossley & Dalgarno [6]	Naqvi [7] (Forbidden lines)	Pasternack [8] (Forbidden lines)	Garstang [9] (Forbidden Lines)	Malville & Berger [10] (Forbidden lines)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Hydrogen	H	1					All ions of Na and Mg Sequences				
Helium	He	2		I							
Lithium	Li	3	I, II	I, II	I	I(7)*					
Beryllium	Be	4	I, II	I . . . III	I, II	I(17), II(2)		I			
Boron	B	5	I . . . III	I . . . IV	I . . . III	I(4)		I, II			
Carbon	C	6	I . . . IV	I . . . V	I . . . IV	I(1)		I . . . III	I		
Nitrogen	N	7	I . . . V	I . . . VI	I . . . V			I . . . IV	I, II		
Oxygen	O	8	I . . . VI	I . . . VII	II . . . VI			I .. . V	I . . . III		
Fluorine	F	9		I . . . VII	III . . . VII			I . . . VI	II . . . IV		
Neon	Ne	10	II . . . IV	II . . . VIII	II, IV . . . VIII			II . . . VII	III . . . V		
Sodium	Na	11	I	I, III . . . IX	I, V . . . IX	I(12)		III . . . VIII	IV . . . VI		IV, VI
Magnesium	Mg	12	I, II	I, II, IV . . . X	II, VI . . . X	I(19), II(6)		I, IV . . . IX	V . . . VII		V, VII
Aluminum	Al	13	I . . . III	I . . . III, V . . . XI	I, III, VII . . . XI	I(16)		I, II, V . . . X	VI . . . VIII		VI, VIII
Silicon	Si	14	I . . . IV	I . . . IV, VI . . . XII	II, IV, VIII . . . XII	I(15)		I . . . III, VI . . . XI	I, VII, VIII		VII, IX
Phosphorus	P	15		I . . . V, VII . . . XIII	III, V, IX . . . XIII	I(9)		I . . . IV, VII . . . XII	I, II		VIII, X
Sulfur	S	16		I . . . VI, VIII . . . XII	IV, X . . . XIV			I . . . V, VIII . . . XIII	I . . . III		IX, XI
Chlorine	Cl	17		I . . . VII, IX . . . XIII	V, XI . . . XV			I . . . VI, IX . . . XIV	II . . . IV		X, XII
Argon	Ar	18	II . . . V	II . . . VIII, X . . . XIV	XII . . . XIV			II . . . VII, X . . . XV	III . . . V		XI, XIII
Potassium	K	19	I, III	III . . . IX, XI . . . XIV	I, XIII . . . XV	I(8)		III . . . VIII, XI . . . XVI	IV . . . VI		IV, VI, XII, XIV
Calcium	Ca	20	I, II	IV . . . X, XII . . . XV	XIV . . . XVI	I(69), II(10)		IV . . . IX, XII . . . XVII	V . . . VII		V . . . VII
Scandium	Sc	21		V . . . XI	XV, XVI	I(230), II(81)		V . . . X	VI, VII		VI, VIII, XVI
Titanium	Ti	22		VI . . . XII		I(707), II(178)		VI . . . XI	VII	III	VII, IX, XVII
Vanadium	V	23		VII . . . XIII		I(795), II(219)		VII . . . XII	VIII		VIII . . . X
Chromium	Cr	24		VIII . . . XIV		I(615), II(177)		VIII . . . XIII	IV, IX	II, IV	IX, XI
Manganese	Mn	25		IX . . . XV		I(290), II(54)		IX . . . XIV	V, X	V, VI	X, XII
Iron	Fe	26		X . . . XVI		I(671), II(80)		X . . . XV	VI, VII, XI	VI, VII	XI, XIII
Cobalt	Co	27		XI . . . XVII		I(602), II(57)		XI . . . XVI			XII, XIV
Nickel	Ni	28		XII . . . XV, XVII, XVIII		I(242), II(4)		XII . . . XVI		I	XIII . . . XV
Copper	Cu	29		XIX		I(46), II(10)				II	XIV
Zinc	Zn	30				I(18), II(2)					XV
Gallium	Ga	31				I(15)				I	
Germanium	Ge	32				I(43)				I, II	
Arsenic	As	33				I(25)				I, III	
Selenium	Se	34				I(5)				I	
Bromine	Br	35								I, II	
Krypton	Kr	36								II, III	
Rubidium	Rb	37				I(13)				III	
Strontium	Sr	38			I	I(67), II(9)					
Yttrium	Y	39				I(260), II(110)					
Zirconium	Zr	40				I(700), II(322)					
Niobium	Nb	41				I(1062), II(314)					
Molybdenum	Mo	42				I(1258), II(208)					
Technetium	Tc	43									
Ruthenium	Ru	44				I(915), II(52)					
Rhodium	Rh	45				I(434), II(25)					

Palladium	Pd	46				I(76), II(4)	All ions of Na and Mg Sequences			
Silver	Ag	47				I(11), II(4)				
Cadmium	Cd	48				I(20), II(4)				
Indium	In	49				I(21), II(1)				I
Tin	Sn	50				I(59)				I, II
Antimony	Sb	51				I(53)				I, III
Tellurium	Te	52				I(12)				I
Iodine	I	53								I, II
Xenon	Xe	54								II, III
Cesium	Cs	55				I(19)				III
Barium	Ba	56				I(79), II(16)				
Lanthanum	La	57				I(270), II(272)				
Cerium	Ce	58				II(1349)				
Praseodymium	Pr	59				II(232)				
Neodymium	Nd	60				I(80), II(275)				
Promethium	Pm	61								
Samarium	Sm	62				I(221), II(780)				
Europium	Eu	63				I(298), II(149)				
Gladolinium	Gd	64				I(520), II(581)				
Terbium	Tb	65				I(3)				
Dysprosium	Dy	66				II(86)				
Holmium	Ho	67				I(3)				
Erbium	Er	68				II(78)				
Thulium	Tm	69				I(62), II(157)				
Ytterbium	Yb	70				I(53), II(281)				
Lutetium	Lu	71				I(82), II(81)				
Hafnium	Hf	72				I(433), II(309)				
Tantalum	Ta	73				I(789), II(288)				
Tungsten	W	74				I(1045), II(108)				
Rhenium	Re	75				I(824), II(48)				
Osmium	Os	76				I(912), II(35)				
Iridium	Ir	77				I(511)				
Platinum	Pt	78				I(161), II(1)				
Gold	Au	79				I(26)				
Mercury	Hg	80				I(19)				II
Thallium	Tl	81				I(18)				I
Lead	Pb	82				I(38), II(1)				I, II
Bismuth	Bi	83				I(32)				I . . . III
Polonium	Po	84								I
Astatine	At	85								
Radon	Rn	86								II
Francium	Fr	87								
Radium	Ra	88								
Actinium	Ac	89								
Thorium	Th	90				I(342), II(789)				
Protactinium	Pa	91								
Uranium	U	92				I(326), II(316)				

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[1] The stage of ionization is indicated by a Roman Numeral (I=neutral atom, II=first ion, etc.). Hydrogen-like ions are generally not included in the bibliography. For relations to hydrogen see section 2 (Conversion factors).

[2] Griem, H. R., "Plasma Spectroscopy" (McGraw-Hill Book Company, New York, 1964).

[3] Varsavsky, C. M., Astrophys. J. Suppl. Ser. **6,** #53, 75 (1961).

[4] Naqvi, A. M., and Victor, G. A., Technical Documentary Report No. RTD TDR-63-3118 (1964). (Obtainable through Defense Documentation Center, Cameron Station, Alexandria, Va.)

[5] Corliss, C. H., and Bozman, W. R., National Bureau of Standards Monograph 53 (1962): "Experimental Transition Probabilities for Spectral Lines of Seventy Elements." (See section 1.2 for discussion.)

[6] Crossley, R. J. S. and Dalgarno, A., Proc. Roy. Soc. London A **286,** 510 (1965).

[7] Naqvi, A. M., Thesis Harvard (1951).

[8] Pasternack, S., Astrophys. J. **92,** 129 (1940); Publ. Astron. Soc. Pacific 51, 160 (1939). (The latter is superseded by the former.)

[9] Garstang, R. H., J. Research NBS **68A,** 61 (1964).

[10] Malville, J. M. and Berger, R. A., Planetary and Space Science **13,** 1131 (1965).

* The Arabic number indicates the number of lines measured.

1.6. Classification of Articles

Except where "rel." (relative) appears, all determinations in the papers listed give absolute values.

A. Theoretical methods:

1. SCF—self-consistent field calculations
2. CA—Coulomb approximation
3. Quant.—other quantum mechanical calculations
4. Quant. forb.—quantum mechanical calculations for forbidden lines
5. Estim.—estimations from sum rules, etc.

B. Experimental methods:

1. Canal—canal ray experiments
2. Emiss.—measurement in emission (arc, furnace, discharge tube, etc.)
3. Absorpt.—measurement in absorption (King furnace, absorption tube, etc.)
4. Life—direct lifetime measurements
5. Hook—anomalous dispersion measurements
6. Misc.—miscellaneous experimental methods (magneto-rotation, polarization, magnetic resonance, astrophysical measurements, Hanle-effect, etc.)

C. Miscellaneous:

1. Comm.—comments, additions, or corrections to other articles, methods, etc.
2. Incompl.—article not yet classified (because translation is needed, incomplete information available, etc.)
3. Compil.—compilations

2. Conversion Factors

The numerical factors relating the quantities A_{ki}, f_{ik}, and S are given in table 2, where:

A_{ki} is the transition probability for spontaneous emission (sec^{-1}).

f_{ik} is the absorption oscillator strength (dimensionless).

S is the line strength in atomic units, which are:

for electric dipole transitions (allowed—denoted by E_d):

$$a_0^2e^2=6.459_6\times10^{-36}\ \text{cm}^2\ \text{esu}^2;$$

for electric quadrupole transitions (forbidden—denoted by E_q):

$$a_0^4e^2=1.808_8\times10^{-52}\ \text{cm}^4\ \text{esu}^2;$$

for magnetic dipole transitions (forbidden—denoted by M_d):

$$e^2h^2/16\pi^2m_e^2c^2=8.599\times10^{-41}\ \text{erg}^2\ \text{gauss}^{-2}.$$

The wavelength λ is given in Angstrom units.

g is the statistical weight.

The factor in each square converts by multiplication the quantity above it into the one at its left. The upper energy level of a transition is denoted by the subscript k, the lower by i. The initial state is written first, i.e., i first means absorption.

Besides the quantities introduced above, the following are also in use and are related to them by:

1. Transition probability of absorption B_{ik}

$$B_{ik}=6.01\lambda^3\frac{g_k}{g_i}A_{ki};$$

2. Transition probability of induced emission B_{ki}

$$B_{ki}=6.01\lambda^3A_{ki};$$

3. Emission oscillator strength f_{ki}

$$f_{ki}=-\frac{g_i}{g_k}f_{ik}.$$

Finally, it should be noted that the line strength S is symmetrical:

$$S=S_{ik}=S_{ki}.$$

Table 2. Conversion factors

	A_{ki}	f_{ik}	S
A_{ki}	1	$\frac{6.669_8\times10^{15}}{\lambda^2}\frac{g_i}{g_k}$	E_d $\frac{2.026_0\times10^{18}}{g_k\lambda^3}$
			E_q $\frac{1.679_7\times10^{18}}{g_k\lambda^5}$
			M_d $\frac{2.697_1\times10^{13}}{g_k\lambda^3}$
f_{ik}	$1.4993\times10^{-16}\lambda^2\frac{g_k}{g_i}$	1	E_d $\frac{303.7_6}{g_i\lambda}$
			E_q $\frac{251.8}{g_i\lambda^3}$
			M_d $\frac{4.043_7\times10^{-3}}{g_i\lambda}$
S	E_d $4.935_8\times10^{-19}g_k\lambda^3$	E_d $3.292_1\times10^{-3}g_i\lambda$	1
	E_q $5.953\times10^{-19}g_k\lambda^5$	E_q $3.971\times10^{-3}g_i\lambda^3$	
	M_d $3.707_7\times10^{-14}g_k\lambda^3$	M_d $247.3_0g_i\lambda$	

Since hydrogen-like ions (with one electron and nuclear charge Z) have intensity quantities which are simply related to hydrogen, papers dealing with these ions are not included in the bibliography. For convenience, the relations are given below:

$$f_Z=f_H \qquad S_Z=Z^{-2}S_H \qquad A_Z=Z^4A_H.$$

References for Section 2

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Nikitin, A. A. & Yakubovskii, O. A.	Soviet Phys.-Doklady 9, 409-411 (1964).	quant. forb.

Ar X

Edlén, B.	Z. Astrophys. 22, 30-64 (1942).	quant. forb.

Ar XI

Osterbrock, D. E.	Astrophys. J. 114, 469-472 (1951).	quant. forb.

AUTHOR	JOURNAL	CLASSIFICATION

Ar XIV

Edlén, B.	Z. Astrophys. 22, 30-64 (1942).	quant. forb.
Nikitin, A. A. & Yakubovskii, O. A.	Soviet Phys.-Doklady 9, 409-411 (1964).	quant. forb.

* * * * *

Au (Gold)*

Au I

Addink, N. W. H.	Spectrochim. Acta 15, 349-359 (1959).	emiss.
Penkin, N. P. & Slavenas, I. Yu. Yu.	Optics and Spectroscopy (U.S.S.R.) 15, 3-5 (1963).	hook
Lawrence, G. M., Link, J. K. & King, R. B.	Astrophys. J. 141, 293-307 (1965).	absorpt.

* * * * *

B (Boron)*

B I

Bolotin, A. B. & Yutsis, A. P.	Zhur. Eksptl. i Teoret. Fiz. 24, 537-543 (1953) (O.T.P. 1).	quant.
Tsiunaitis, G. K. & Yutsis, A. P.	Soviet Phys. - JETP 1, 358-363 (1955).	SCF
Nikitin, A. A. & Yakubovskii, O. A.	Soviet Phys.-Doklady 9, 409-411 (1964).	quant. forb.
Lawrence, G. M. & Savage, B. D.	Phys. Rev. 141, 67-70 (1966).	life

B II

Veselov, M. G.	Zhur. Eksptl. i Teoret. Fiz. 19, 959-964 (1949) (ATS transl.).	quant.
Bolotin, A. B. & Yutsis, A. P.	Zhur. Eksptl. i Teoret. Fiz. 24, 537-543 (1953) (O.T.P. 1).	quant.
Veselov, M. G.	Vestnik Leningrad Univ. Ser. Fiz. i Khim. No. 8, 181-185 (1953) (O.T.P. 1).	quant.

*See also Table 1.

AUTHOR	JOURNAL	CLASSIFICATION
Varsavsky, C. M.	Thesis Harvard (1958).	quant.
Yutsis, A. P., Vizbaraite, Ia. I. & Eringis, K. K.	Trudy Akademii Nauk Litovskoi S.S.R. Seriia B 3 (26) 99-105 (1961) (O.T.P. 2).	quant.
Lawrence, G. M. & Savage, B. D.	Phys. Rev. 141, 67-70 (1966).	life

B III

Veselov, M. G.	Zhur. Eksptl. i Teoret. Fiz. 19, 959-964 (1949) (ATS transl.).	quant.
Kantseriavichius, A.	Litovskii Fizicheskii Sbornik 2, 245-257 (1962).	quant.
Cohen, M. & Dalgarno, A.	Proc. Roy. Soc. London A 275, 492-503 (1963).	quant.
Flannery, M. R. & Stewart, A. L.	Monthly Notices Roy. Astron. Soc. 126, 387-392 (1963).	quant.
Weiss, A. W.	Astrophys. J. 138, 1262-1276 (1963).	SCF

B IV

Veselov, M. G.	Zhur. Eksptl. i Teoret. Fiz. 19, 959-964 (1949) (ATS transl.).	quant.
Veselov, M. G.	Vestnik Leningrad Univ. Ser. Fiz. i Khim. No. 8, 181-185 (1953) (O.T.P. 1).	quant.
Kantseriavichius, A.	Litovskii Fizicheskii Sbornik 2, 245-257 (1962).	quant.

* * * * *

Ba (Barium)*

Ba I

Prokof'ev, V. K.	Z. Physik 50, 701-715 (1928).	hook, rel.
Prokof'ev, V. K.	Zhur. Eksptl. i Teoret. Fiz. 1, 111-122 (1931) (O.T.P. 1).	hook, rel.
Chamalaun, F. J.	Thesis Utrecht (1934).	emiss., rel. & quant., rel.
King, G. W. & van Vleck, J. H.	Phys. Rev. 56, 464-465 (1939).	quant. forb., rel.
Rozhdestvenskii, D. S. Penkin, N. P.	J. Phys. (U.S.S.R.) 5, 319-337 (1941).	hook, rel. & comm.

*See also Table 1.

AUTHOR	JOURNAL	CLASSIFICATION
Rozhoestvenskii, D. S. Penkin, N. P.	Izvest. Akad. Nauk S.S.S.R. Ser. Fiz. 5, 97-101 (1941) (O.T.P. 1).	hook, rel.
Kruithof, A. M.	Thesis Utrecht (1943).	emiss. rel.
Kruithof, A. M.	Physica 10, 493-501 (1943).	emiss., rel.
Kruithof, A. M. & Smit, J. A.	Physica 11, 129-143 (1944) (transl.).	estim.
Penkin, N. P.	Izvest. Akao. Nauk S.S.S.R. Ser. Fiz. 11, 217-220 (1947) (O.T.P. 1).	hook, rel.
Wessel, G.	Z. Physik 126, 440-449 (1949).	absorpt.
Ostrovskii, Yu. I., Penkin, N. P. & Shabanova, L. N.	Bull. Acao. Sci. U.S.S.R. Phys. Ser. 22, 720-724 (1958).	hook
Ostrovskii, Yu. I., Penkin, N. P. & Shabanova, L. N.	Soviet Phys.-Doklady 3, 538-540 (1958).	hook
Addink, N. W. H.	Spectrochim. Acta 15, 349-359 (1959).	emiss.
Ostrovskii, Yu. I. & Penkin, N. P.	Optics and Spectroscopy (U.S.S.R.) 9, 371-373 (1960).	hook, rel.
Bucka, H. & Schussler, H. J.	Ann. Physik 7, 225-232 (1961).	misc.
Bucka, H. & Nagel, H. H.	Ann. Physik 8, 329-332 (1961).	misc.
Ostrovskii, Yu. I. & Penkin, N. P.	Optics ano Spectroscopy (U.S.S.R.) 11, 307-309 (1961).	hook & comm.
Eicke, H. F.	Z. Physik 168, 227-238 (1962).	emiss.
Kolesnikov, V. N. & Slepchenko, N. S.	Fiz. Probl. Spektroskopii, Akao. Nauk S.S.S.R., Materialy 13-Go (Trinaotsatogo) Soveshch., Leningrad 41-43 (1962) (transl.).	ca & emiss., rel.
Lebeoeva, V. V.	Fiz. Probl. Spektroskopii, Akao. Nauk S.S.S.R., Materialy 13-Go (Trinadtsatago) Soveshch., Leningrao 43-45 (1962).	incompl.
Penkin, N. P. & Shabanova, L. N.	Optics ano Spectroscopy (U.S.S.R.) 12, 1-5 (1962).	hook
Vainshtein, L. A. & Poluektov, I. A.	Optics ano Spectroscopy (U.S.S.R.) 12, 254-257 (1962).	quant., rel.
Helliwell, T. M.	Thesis California Institute of Technology (1963).	quant.
Helliwell, T. M.	Phys. Rev. 135, A325-A331 (1964).	quant.
Hulpke, E., Paul, E. & Paul, W.	Z. Physik 177, 257-268 (1964).	life
Lurio, A.	Phys. Rev. 136, A376-A379 (1964).	misc.
Penkin, N. P. & Shabanova, L. N.	Optics ano Spectroscopy (U.S.S.R.) 18, 535-537 (1965).	comm.

Ba II

AUTHOR	JOURNAL	CLASSIFICATION
Kerschbaum, H.	Ann. Physik 83, 287-295 (1927).	canal
Mason, R. C.	Physica 5, 777-783 (1938).	emiss., rel.
Rozhdestvenskii, D. S. & Penkin, N. P.	J. Phys. (U.S.S.R.) 5, 319-337 (1941).	hook, rel. & comm.

AUTHOR	JOURNAL	CLASSIFICATION
Kruithof, A. M.	Thesis Utrecht (1943).	emiss. rel.
Kruithof, A. M.	Physica 10, 493-501 (1943).	emiss., rel.
Kruithof, A. M. & Smit, J. A.	Physica 11, 129-143 (1944) (transl.).	estim.
Reindl, H. P.	Thesis Utrecht (1946).	emiss.
Nikonova, E. I. & Prokof'ev, V. K.	Optika i Spektroskopiya 1, 290-297 (1956) (transl.).	hook, rel.
Boyarchuk, M. E. & Boyarchuk, A. A.	Akademiia Nauk S.S.S.R. Krymskaia astrofizecheskaia observatoriia. Izvestiia 22, 234-256 (1960) (O.T.P. 1).	comm.
Belousova, I. M. & Gurevich, D. B.	Optics and Spectroscopy (U.S.S.R.) 10, 206-207 (1961).	comm.
Ostrovskii, Yu. I. & Penkin, N. P.	Optics and Spectroscopy (U.S.S.R.) 10, 3-6 (1961).	hook
Ostrovskii, Yu. I. & Penkin, N. P.	Optics and Spectroscopy (U.S.S.R.) 11, 307-309 (1961).	comm.
Kolesnikov, V. N. & Slepchenko, N. S.	Fiz. Probl. Spektroskopii, Akad. Nauk S.S.S.R., Materialy 13-Go (Trinadtsatogo) Soveshch., Leningrad 41-43 (1962) (transl.).	CA & emiss., rel.
Roberts, T. G. & Hales, W. L.	U. S. Army Missile Command Redstone Arsenal, Alabama, Report No. RR-TR-62-8 (1962).	CA
Bialas-Zabawa, A., Skulska, E. & Walach, Z.	Acta Phys. Polon. 26, 175-183 (1964).	quant., rel.
Petrini, D.	Comp. rend. 260, 4929-4932 (1965).	quant.
Garstang, R. H. & Hill, S. J.	Publ. Astron. Soc. Pacific (to be publ.).	SCF, comm., & quant. forb.

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Be (Beryllium)*

Be I

AUTHOR	JOURNAL	CLASSIFICATION
Bates, D. R. & Damgaard, A.	Phil. Trans. Roy. Soc. London. Ser. A. 242, 101-122 (1949).	SCF
Biermann, L. & Trefftz, E.	Z. Astrophys. 26, 213-239 (1949).	SCF
Veselov, M. G.	Zhur. Eksptl. i Teoret. Fiz. 19, 959-964 (1949) (ATS transl.).	quant.
Bolotin, A. B. & Yutsis, A. P.	Zhur. Eksptl. i Teoret. Fiz. 24, 537-543 (1953) (O.T.P. 1).	quant.
Veselov, M. G.	Vestnik Leningrad Univ. Ser. Fiz. i Khim. No. 8, 181-185 (1953) (O.T.P. 1).	quant.

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*See also Table 1.

AUTHOR	JOURNAL	CLASSIFICATION
Greenstein, J. L. & Tandberg-Hanssen, E.	Astrophys. J. 119, 113-119 (1954).	comm.
Varsavsky, C. M.	Thesis Harvard (1958).	quant.
Addink, N. W. H.	Spectrochim. Acta 15, 349-359 (1959).	emiss.
Yutsis, A. P., Vizbaraite, Ia. I. & Eringis, K. K.	Trudy Akademii Nauk Litovskoi S.S.R. Seriia B 3 (26) 99-105 (1961) (O.T.P. 2).	quant.
Kachalov, V. P., Khokhlov, M. Z., Khokhlova, V. L. & Yakovlena, A. V.	Akademiia Nauk S.S.S.R. Krymskaia astrofizecheskaia observatoriia. Izvestiia 27, 44-51 (1962).	incompl.
Khokhlov, M. Z.	Akademiia Nauk S.S.S.R. Krymskaia astrofizecheskaia observatoriia. Izvestiia 28, 277-287 (1962).	absorpt., rel.
Naqvi, A. M.	Conference on Opacity, Albuquerque, N.M. April 8 & 9, Geophysics Corp. of America Bedford, Mass. (1963).	quant. & SCF
Naqvi, A. M.	J. Quant. Spectrosc. Radiat. Transfer 4, 597-615 (1964).	quant.
Pfennig, H., Steele, P. & Trefftz, E.	J. Quant. Spectrosc. Radiat. Transfer 5, 355-347 (1965).	SCF

Be II

Veselov, M. G.	Zhur. Eksptl. i Teoret. Fiz. 19, 959-964 (1949) (ATS transl.).	quant.
Greenstein, J. L. & Tandberg-Hanssen, E.	Astrophys. J. 119, 113-119 (1954).	comm.
Varsavsky, C. M.	Thesis Harvard (1958).	quant.
Kantseriavichius, A.	Litovskii Fizicheskii Sbornik 2, 245-257 (1962).	quant.
Roberts, T. G. & Hales, W. L.	U. S. Army Missile Command Redstone Arsenal, Alabama, Report No. RR-TR-62-8 (1962).	CA
Cohen, M. & Dalgarno, A.	Proc. Roy. Soc. London A 275, 492-503 (1963).	quant.
Flannery, M. R. & Stewart, A. L.	Monthly Notices Roy. Astron. Soc. 126, 387-392 (1963).	quant.
Kunin, P., Taksar, I., Shiltere, M. & Shilter, E.	Izvestiia Akademii Nauk Lativskoi S.S.R. #8 57-62 (1963).	quant.
Weiss, A. W.	Astrophys. J. 138, 1262-1276 (1963).	SCF

Be III

Veselov, M. G.	Zhur. Eksptl. i Teoret. Fiz. 19, 959-964 (1949) (ATS transl.).	quant.
Veselov, M. G.	Vestnik Leningrad Univ. Ser. Fiz. i Khim. No. 8, 181-185 (1953) (O.T.P. 1).	quant.

AUTHOR	JOURNAL	CLASSIFICATION
Yutsis, A. P., Ushpalis, K. K., Kavetskis, V. I. & Levinson, I. B.	Optika i Spektroskopiya 1, 601-605 (1956) (O.T.P. 1).	quant.
Ushpalis, K. K., Kuzmitskite, L. L. & Budrite, S. D.	Trudy Akademii Nauk Litovskoi S.S.R. Seriia B 3 (15) 47-53 (1958).	quant.
Yutsis, A. P., Vizbaraite, Ia. I. & Eringis, K. K.	Trudy Akademii Nauk Litovskoi S.S.R. Seriia B 3 (26) 99-105 (1961) (O.T.P. 2).	quant.
Kantseriavichius, A.	Litovskii Fizicheskii Sbornik 2, 245-257 (1962).	quant.

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Bi (Bismuth)*

Bi I

AUTHOR	JOURNAL	CLASSIFICATION
Sobolev, N. N.	Zhur. Eksptl. i Teoret. Fiz. 13, 131-136 (1943) (O.T.P. 1).	emiss., rel.
Allen, C. W.	Monthly Notices Roy. Astron. Soc. 117, 622-628 (1957).	comm.
Allen, C. W. & Asaad, A. S.	Monthly Notices Roy. Astron. Soc. 117, 36-49 (1957).	emiss.
Rice, P. A. & Ragone, D. V.	J. Chem. Phys. 42, 701-708 (1965).	absorpt.

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Br (Bromine)*

Br II

AUTHOR	JOURNAL	CLASSIFICATION
Martin, W. C. & Tech, J. L.	J. Opt. Soc. Am. 51, 591-594 (1961).	quant. forb.

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C (Carbon)*

C I

AUTHOR	JOURNAL	CLASSIFICATION
Stevenson, A. F.	Proc. Roy. Soc. London A 137, 298-325 (1932).	quant. forb.
Condon, E. U.	Astrophys. J. 79, 217-234 (1934).	quant. forb.

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*See also Table 1.

AUTHOR	JOURNAL	CLASSIFICATION
Garstang, R. H.	Monthly Notices Roy. Astron. Soc. 111, 115-124 (1951).	QUANT. FORB.
Yamanouchi, T. & Horie, H.	J. Phys. Soc. Japan 7, 52-56 (1952).	QUANT. FORB.
Maecker, H.	Z. Physik 135, 13-22 (1953).	EMISS.
Yilmaz, H.	Phys. Rev. 100, 1148-1153 (1955).	QUANT. FORB.
Bolotin, A. B., Levinson, I. B. & Levin, L. I.	Soviet Phys. - JETP 2, 391-395 (1956).	QUANT.
Richter, J.	Z. Physik 151, 114-123 (1958).	EMISS.
Varsavsky, C. M.	Thesis Harvard (1958).	QUANT.
Yutsis, A. P. & Vizbaraite, Ia. I.	Trudy Akademii Nauk Litovskoi S.S.R., Seriia B, 1 (17) 3-15 (1959).	QUANT. FORB.
Goldberg, L., Müller, E. A. & Aller, L. H.	Astrophys. J. Suppl. Ser. 5, #45, 1-137 (1960).	CA
Doherty, L. R.	Thesis Michigan (1961).	EMISS.
Khokhlov, M. Z.	Akademiia Nauk S.S.S.R. Krymskaia astrofizicheskaia observatoriia. Izvestiia 26, 52-62 (1961).	QUANT.
Yutsis, A. P. & Vizbaraite, Ia. I. & Eringis, K. K.	Trudy Akademii Nauk Litovskoi S.S.R., Seriia B, 3 (26) 99-105 (1961) (O.T.P. 2).	QUANT. FORB.
Foster, E. W.	Proc. Phys. Soc. London A 79, 94-104 (1962).	EMISS.
Foster, E. W.	Proc. Phys. Soc. London A 80, 882-893 (1962).	EMISS.
Garstang, R. H.	The Observatory 82, 50-51 (1962).	QUANT.
Boldt, G.	Z. Naturforsch. 18a, 1107-1116 (1963).	EMISS.
Norman, G. E.	Optics and Spectroscopy (U.S.S.R.) 14, 315-317 (1963).	QUANT.
Lawrence, G. M. & Savage, B. D.	Phys. Rev. 141, 67-70 (1966).	LIFE

C II

Aller, L. H.	Astrophys. J. 97, 135-165 (1943).	QUANT.
Biermann, L. & Lübeck, K.	Z. Astrophys. 25, 325-339 (1948).	SCF
Bolotin, A. B. & Yutsis, A. P.	Zhur. Eksptl. i Teoret. Fiz. 24, 537-543 (1953) (O.T.P. 1).	QUANT.
Maecker, H.	Z. Physik 135, 13-22 (1953).	EMISS.
Varsavsky, C. M.	Thesis Harvard (1958).	QUANT.
Aller, L. H. & Jugaku, J.	Astrophys. J. Suppl. Ser. 4, #38, 109-156 (1959).	CA
Gaustad, J. E. & Spitzer, Jr., L.	Astrophys. J. 134, 771-776 (1961).	COMM. & ESTIM.
Nikitin, A. A. & Yakubovskii, O. A.	Soviet Astronomy-AJ 7, 189-198 (1963).	QUANT.
Nikitin, A. A. & Yakubovskii, O. A.	Soviet Phys.-Doklady 9, 409-411 (1964).	QUANT. FORB.
Lawrence, G. M. & Savage, B. D.	Phys. Rev. 141, 67-70 (1966).	LIFE

AUTHOR	JOURNAL	CLASSIFICATION
Roberts, J. R. & Eckerle, K. L.	Bull. Am. Phys. Soc. 11, #1 (1966).	emiss., rel.
	C III	
Aller, L. H.	Astrophys. J. 97, 135-165 (1943).	quant.
Veselov, M. G.	Zhur. Eksptl. i Teoret. Fiz. 19, 959-964 (1949) (ATS transl.).	quant.
Bolotin, A. B. & Yutsis, A. P.	Zhur. Eksptl. i Teoret. Fiz. 24, 537-543 (1953) (O.T.P. 1).	quant.
Veselov, M. G.	Vestnik Leningrad Univ. Ser. Fiz. i Khim. No. 8, 181-185 (1953) (O.T.P. 1).	quant.
Gaustad, J. E. & Spitzer, Jr., L.	Astrophys. J. 134, 771-776 (1961).	estim.
Yutsis, A. P., Vizbaraite, Ia. I. & Eringis, K. K.	Trudy Akademii Nauk Litovskoi S.S.R. Seriia B 3 (26) 99-105 (1961) (O.T.P. 2).	quant.
Pfennig, H., Steele, P. & Trefftz, E.	J. Quant. Spectrosc. Radiat. Transfer 5, 355-347 (1965).	SCF
	C IV	
Aller, L. H.	Astrophys. J. 97, 135-165 (1943).	quant.
Veselov, M. G.	Zhur. Eksptl. i Teoret. Fiz. 19, 959-964 (1949) (ATS transl.).	quant.
Kantseriavichius, A.	Litovskii Fizicheskii Sbornik 2, 245-257 (1962).	quant.
Cohen, M. & Dalgarno, A.	Proc. Roy. Soc. London A 275, 492-503 (1963).	quant.
Flannery, M. R. & Stewart, A. L.	Monthly Notices Roy. Astron. Soc. 126, 387-392 (1963).	quant.
Weiss, A. W.	Astrophys. J. 138, 1262-1276 (1963).	SCF
Berkner, K. H., Cooper III, W. S., Kaplan, S. N. & Pyle, R. V.	Phys. Letters 16, 35-36 (1965).	life
	C V	
Veselov, M. G.	Zhur. Eksptl. i Teoret. Fiz. 19, 959-964 (1949) (ATS transl.).	quant.
Veselov, M. G.	Vestnik Leningrad Univ. Ser. Fiz. i Khim. No. 8, 181-185 (1953) (O.T.P. 1).	quant.
Kantseriavichius, A.	Litovskii Fizicheskii Sbornik 2, 245-257 (1962).	quant.

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Ca (Calcium)*

Ca I

AUTHOR	JOURNAL	CLASSIFICATION
Frerichs, R.	Z. Physik 31, 305-310 (1925).	emiss., rel.
Kerschbaum, H.	Ann. Physik 83, 287-295 (1927).	canal
Prokof'ev, V. K.	Z. Physik 50, 701-715 (1928).	hook, rel.
Menzel, D. H.	Publ. Lick Observatory 17, 232-238 (1930).	comm. & estim.
Prokof'ev, V. K.	Zhur. Eksptl. i Teoret. Fiz. 1, 111-122 (1931) (O.T.P. 1).	hook, rel.
Filippov, A. & Kremenevsky, N.	Physik. Z. Sowjetunion 1, 299-301 (1932).	hook, rel.
Russell, H. N.	Astrophys. J. 78, 239-297 (1933).	estim.
Chamalaun, F. J.	Thesis Utrecht (1934).	emiss., rel. & quant., rel.
Steinhäuser, A.	Z. Physik 95, 669-686 (1935).	misc.
Steinhäuser, A.	Z. Physik 99, 300 (1936).	comm.
Katz, E. & Ornstein, L. S.	Physica 4, 757-760 (1937).	emiss., rel.
Hartree, D. R. & Hartree, W.	Proc. Roy. Soc. London A 164, 167-191 (1938).	SCF
King, G. W. & van Vleck, J. H.	Phys. Rev. 56, 464-465 (1939).	quant. forb., rel.
Schuttevaer, J. W.	Thesis Utrecht (1942).	emiss., rel.
Schuttevaer, J. W., de Bont, M. J. & van den Broek, Th. H.	Physica 10, 544-552 (1943).	emiss., rel.
Bates, D. R. & Damgaard, A.	Phil. Trans. Roy. Soc. London. Ser. A. 242, 101-122 (1949).	SCF
Trefftz, E.	Z. Astrophys. 29, 287-303 (1951).	SCF
Olsen, K. H., Routly, P. M. & King, R. B.	Proceedings of the National Science Foundation Conference on Stellar Atmospheres, Indiana Univ., p. 46 (1954).	absorpt., rel.
Olsen, K. H.	Thesis California Institute of Technology (1956).	absorpt.
Allen, C. W.	Monthly Notices Roy. Astron. Soc. 117, 622-628 (1957).	emiss. & CA
Vainshtein, L. A.	Optika i Spektroskopiya 3, 313-321 (1957) (transl.).	quant.
Ostrovskii, Yu. I., Penkin, N. P. & Shabanova, L. N.	Bull. Acad. Sci. U.S.S.R. Phys. Ser. 22, 720-724 (1958).	hook
Ostrovskii, Yu. I., Penkin, N. P. & Shabanova, L. N.	Soviet Phys.-Doklady 3, 538-540 (1958).	hook
Varsavsky, C. M.	Thesis Harvard (1958).	quant.
Addink, N. W. H.	Spectrochim. Acta 15, 349-359 (1959).	emiss.

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*See also Table 1.

AUTHOR	JOURNAL	CLASSIFICATION
Olsen, K. H., Routly, P. M. & King, R. B.	Astrophys. J. 130, 688-692 (1959).	absorpt.
Boyarchuk, M. E. & Boyarchuk, A. A.	Akademiia Nauk S.S.S.R. Krymskaia astrofizecheskaia observatoriia. izvestiia 22, 234-256 (1960) (O.T.P. 1).	comm., rel.
Ditchburn, R. W. & Hudson, R. D.	Proc. Roy. Soc. London A 256, 53-61 (1960).	absorpt.
Goldberg, L., Müller, E. A. & Aller, L. H.	Astrophys. J. Suppl. Ser. 5, #45, 1-137 (1960).	CA
Chiplis, I. V. & Ushpalis, K. K.	Trudy Akademii Nauk Litovskoi S.S.R. Seriia B, 2 (25), 23-30 (1961) (O.T.P. 2).	quant.
Ostrovskii, Yu. I. & Penkin, N. P.	Optics and Spectroscopy (U.S.S.R.) 10, 219-222 (1961).	hook, rel.
Ostrovskii, Yu. I. & Penkin, N. P.	Optics and Spectroscopy (U.S.S.R.) 11, 307-309 (1961).	hook & comm.
Strotskite, T. D. & Yutsis, A. P.	Trudy Akademii Nauk Litovskoi S.S.R. Seriia B, 2 (25), 93-98 (1961) (O.T.P. 2).	quant.
Roberts, T. G. & Hales, W. L.	U. S. Army Missile Command Redstone Arsenal, Alabama, Report No. RR-TR-62-8 (1962).	CA
Vainshtein, L. A.	Transactions of the P.N. Lebedev Physics Institute 15, part 1, 1-50 (1962) (CBE-TR).	quant.
Vainshtein, L. A. & Poluektov, I. A.	Optics and Spectroscopy (U.S.S.R.) 12, 254-257 (1962).	quant., rel.
Vasin, B. L., Leskov, L. V. & Savin, F. A.	Fiz. Probl. Spektroskopii, Akad. Nauk S.S.S.R., Materialy 13-Go (Trin1aadtsatago) Soveshch., Leningrad 39-41 (1962).	life
Helliwell, T. M.	Thesis California Institute of Technology (1963).	quant.
Odinstov, A. I.	Optics and Spectroscopy (U.S.S.R.) 14, 172-176 (1963).	absorpt.
Shabanova, L. N.	Optics and Spectroscopy (U.S.S.R.) 15, 450-451 (1963).	hook
Helliwell, T. M.	Phys. Rev. 135, A325-A331 (1964).	quant.
Hulpke, E., Paul, E. & Paul, W.	Z. Physik 177, 257-268 (1964).	life
Köstlin, H.	Z. Physik 178, 200-215 (1964).	emiss.
Lurio, A., de Zafra, R. L. & Goshen, R. J.	Phys. Rev. 134, A1198-A1203 (1964).	misc.
Penkin, N. P. & Shabanova, L. N.	Optics and Spectroscopy (U.S.S.R.) 18, 535-537 (1965).	comm.
Stewart, J. C. & Rotenberg, M.	Phys. Rev. 140, 1508A-1519A (1965).	quant.

Ca II

Milne, M. E.	Monthly Notices Roy. Astron. Soc. 84, 354-363 (1924).	misc.
Zwaan, A.	Naturwissenschaften 17, 121-122 (1928).	quant.

AUTHOR	JOURNAL	CLASSIFICATION
Gerasimovic, B. P. & Struve, O.	Astrophys. J. 69, 7-33 (1929).	misc. & comm.
Zwaan, A.	Thesis Utrecht (1929).	quant.
Zwaan, A.	Arch. neerl. sci. 3 A 12, 1-75 (1929).	quant.
Menzel, D. H.	Publ. Lick Observatory 17, 232-238 (1930).	comm. & estim.
Russell, H. N.	Astrophys. J. 78, 239-297 (1933).	estim.
Hartree, D. R. & Hartree, W.	Proc. Roy. Soc. London A 164, 167-191 (1938).	SCF
Bates, D. R. & Damgaard, A.	Phil. Trans. Roy. Soc. London. Ser. A. 242, 101-122 (1949).	SCF
Green, L. C. & Weber, N. E.	Astrophys. J. 111, 582-586 (1950).	SCF
Green, L. C., Weber, N. E. & Krawitz, E.	Astrophys. J. 113, 690-696 (1951).	SCF
Osterbrock, D. E.	Astrophys. J. 114, 469-472 (1951).	quant. forb.
Seaton, M. J.	Proc. Roy. Soc. London A 208, 418-430 (1951).	comm.
Green, L. C., Weber, N. E. & Krawitz, E.	Astron. J. 56, 38 (1951-1952).	SCF & comm.
Trefftz, E. & Biermann, L.	Z. Astrophys. 30, 275-281 (1952).	SCF
Nikitin, A. A.	Doklady Akad. Nauk S.S.S.R. 98, 31-33 (1954) (SLA-RT 2961) (O.T.P. 2).	estim., forb.
Nikitin, A. A. & Gordienko, G. V.	Doklady Akad. Nauk Armyan. S.S.R. 20, 165-167 (1955) (O.T.P. 1).	quant.
Nikonova, E. I. & Prokof'ev, V. K.	Optika i Spektroskopiya 1, 290-297 (1956) (transl.).	hook, rel.
Bersuker, I. B.	Soviet Phys. - Doklady 2, 167-169 (1957).	SCF & estim.
Nikitin, A. A.	Uchenye Zapiski Leningrad. Gosudarst. Univ. Ser. Mat. Nauk 29, No. 190, 3-17 (1957) (O.T.P. 2).	estim. forb.
Dvornikova, I. U. & Nagibina, I. M.	Optika i Spektroskopiya 4, 421-429 (1958) (O.T.P.2).	emiss., rel.
Nagibina, I. M.	Bull. Acad. Sci. U.S.S.R. Phys. Ser. 22, 678-679 (1958).	emiss., rel.
Nagibina, I. M.	Optika i Spektroskopiya 4, 430-437 (1958) (O.T.P.2).	emiss., rel.
Varsavsky, C. M.	Thesis Harvard (1958).	quant.
Houziaux, L. & Sadoine, M. P.	Bull. soc. roy. sci. Liége 30, 287-299 (1961).	CA
Korolev, F. A. & Kvaratskheli, Yu. K.	Optics and Spectroscopy (U.S.S.R.) 10, 200-202 (1961).	emiss., rel.
Ostrovskii, Yu. I. & Penkin, N. P.	Optics and Spectroscopy (U.S.S.R.) 10, 3-6 (1961).	hook
Ostrovskii, Yu. I. & Penkin, N. P.	Optics and Spectroscopy (U.S.S.R.) 11, 307-309 (1961).	comm.
Douglas, A. S. & Garstang, R. H.	Proc. Cambridge Phil. Soc. 58, 377-381 (1962).	SCF

AUTHOR	JOURNAL	CLASSIFICATION
Korolev, F. A. & Kvaratskheli, Iu. K.	Fiz. Probl. Spektroskopii, Akad. Nauk S.S.S.R. Materialy 13-Go (Trinaotsatago) Soveshch. Leningrao 109-111 (1962).	emiss., rel.
Roberts, T. G. & Hales, W. L.	U. S. Army Missile Command Reostone Arsenal, Alabama, Report No. RR-TR-62-8 (1962).	CA
Bialas-Zabawa, A., Skulska, E. & Walach, Z.	Acta Phys. Polon. 26, 175-183 (1964).	quant., rel.
Gallagher, A. & Smith, W. W.	Bull Am. Phys. Soc. Series II, 10, 455 (1965).	misc.
	Ca VII	
Osterbrock, D. E.	Astrophys. J. 114, 469-472 (1951).	quant. forb.
	Ca VIII	
Nikitin, A. A. & Yakubovskii, O. A.	Soviet Phys.-Doklaoy 9, 409-411 (1964).	quant. forb.
	Ca X	
Stewart, J. C. & Rotenberg, M.	Phys. Rev. 140, 1508A-1519A (1965).	quant.
	Ca XII	
Eolén, B.	Z. Astrophys. 22, 30-64 (1942).	quant. forb.
Huang, K.	Astrophys. J. 101, 187-195 (1945).	misc. forb.
	Ca XIII	
Eolén, B.	Z. Astrophys. 22, 30-64 (1942).	quant. forb.
Huang, K.	Astrophys. J. 101, 187-195 (1945).	misc. forb.
Garstang, R. H.	Astrophys. J. 115, 569-570 (1952).	quant. forb.
	Ca XV	
Eolén, B.	Z. Astrophys. 22, 30-64 (1942).	quant. forb.
Garstang, R. H.	Astrophys. J. 115, 569-570 (1952).	quant. forb.
Garstang, R. H.	Proc. Cambrioge Phil. Soc. 52, 107-113 (1956).	quant. forb.

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Cd (Cadmium)*

Cd I

AUTHOR	JOURNAL	CLASSIFICATION
Kuhn, W.	Naturwissenschaften 14, 48-49 (1926).	misc.
Kuhn, W.	Kgl. Danske Videnskab. Selskab Mat.-fys. Medd. 7, 1-86 (1926).	misc.
Soleillet, P.	Compt. rend. 187, 212-214 (1928).	misc.
Ellett, A.	Phys. Rev. 33, 124 (1929).	misc.
Larche, K.	Z. Physik 67, 440-477 (1931).	misc., rel.
Zemansky, M. W.	Z. Physik 72, 587-599 (1931).	absorpt.
Filippov, A. N.	Trudy Gosudarst. Opt. Inst. Leningrad 8, #77, 1-8 (1932) (O.T.P. 1).	hook, rel.
Filippov, A. N.	Physik. Z. Sowjetunion 1, 289-296 (1932).	hook, rel.
Koenig, H. D. & Ellett, A.	Phys. Rev. 39, 576-584 (1932).	life
Mitchell, A. C. G.	Phys. Rev. 43, 887-893 (1933).	comm.
Soleillet, P.	Compt. rend. 196, 1991-1993 (1933).	misc.
Ornstein, L. S., van Hengstum, J. P. A. & Brinkman, H.	Physica 5, 145-152 (1938).	emiss., rel.
King, G. W. & van Vleck, J. H.	Phys. Rev. 56, 464-465 (1939).	quant. forb., rel.
King, R. B. & Stockbarger, D. C.	Astrophys. J. 91, 488-502 (1940).	absorpt.
Schuttevaer, J. W., de Bont, M. J. & van den Broek, Th. H.	Physica 10, 544-552 (1943).	emiss., rel.
Webb, H. W. & Messenger, H. A.	Phys. Rev. 66, 77-86 (1944).	life
Vainshtein, L. A. & Yavorskii, B. M.	Doklady Akad. Nauk S.S.S.R. 87, 919-922 (1952) (O.T.P. 1).	quant.
Matland, C. G.	Phys. Rev. 91, 436 (1953).	life
Vainshtein, L. A. & Yavorskii, B. M.	Zhur. Eksptl. i Teoret. Fiz. 27, 712-718 (1954) (SLA transl. RT-3363).	quant.
van Hengstum, J. P. A.	Thesis Utrecht (1955).	emiss.
van Hengstum, J. P. A. & Smit, J. A.	Physica 22, 86-98 (1956).	emiss.
Vainshtein, L. A.	Optika i Spektroskopiya 3, 313-321 (1957) (transl.).	quant.
Leś, Z. & Niewodniczański, H.	Acta Phys. Polon. 17, 365-368 (1958).	emiss., rel.
Nagibina, I. M.	Optika i Spektroskopiya 4, 430-437 (1958) (O.T.P.2).	emiss., rel.
Addink, N. W. H.	Spectrochim. Acta 15, 349-359 (1959).	emiss.
Geneux, E. & Wanders-Vincenz, B.	Helv. Phys. Acta 33, 185-220 (1960) (transl.).	misc.
Penkin, N. P. & Red'ko, T. P.	Optics and Spectroscopy (U.S.S.R.) 9, 360 (1960).	hook, rel. & emiss., rel.

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*See also Table 1.

AUTHOR	JOURNAL	CLASSIFICATION
Barrat, J. P. & Butaux, J.	Compt. rend. 253, 2668-2670 (1961).	misc.
Leś, Z. & Niewodniczański, H.	Acta Phys. Polon. 20, 701-714 (1961).	emiss., rel.
Garstang, R. H.	J. Opt. Soc. Am. 52, 845-851 (1962).	quant.
Vainshtein, L. A.	Transactions of the P.N. Lebedev Physics Institute 15, part 1, 1-50 (1962) (CBE-TR).	quant.
Vainshtein, L. A. & Poluektov, I. A.	Optics and Spectroscopy (U.S.S.R.) 12, 254-257 (1962).	quant., rel.
Barrat, M. & Barrat, J. P.	Comp. rend. 257, 1463-1465 (1963).	misc.
Helliwell, T. M.	Thesis California Institute of Technology (1963).	quant.
Barrat, M.	Comp. rend. 259, 1063-1066 (1964).	misc.
Bieniewski, T.	Monthly Notices Roy. Astron. Soc. 127, 359-366 (1964).	absorpt.
Byron, Jr., F. W. McDermott, M. N. & Novick, R.	Phys. Rev. 134, A615-A624 (1964).	misc.
Helliwell, T. M.	Phys. Rev. 135, A325-A331 (1964).	quant.
Lurio, A. & Novick, R.	Phys. Rev. 134, A608-A614 (1964).	misc.
Spitzer, M.	Comp. rend. 3907-3909 (1965).	misc.

Cd II

Geneux, E. & Wanders-Vincenz, B.	Helv. Phys. Acta 33, 185-220 (1960) (transl.).	misc.
Geneux, E. & Wanders-Vincenz, B.	Phys. Rev. Letters 3, 422-423 (1959).	misc.
Barrat, M. & Barrat, J. P.	Comp. rend. 257, 1463-1465 (1963).	misc.

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Cl (Chlorine)*

Cl I

Hey, P.	Z. Physik 157, 79-88 (1959).	emiss.
Foster, E. W.	Proc. Phys. Soc. London A 80, 882-893 (1962).	emiss.
Bagus, P. S.	U. S. Atomic Energy Commission ANL-6959 (1964).	SCF

Cl II

Osterbrock, D. E.	Astrophys. J. 114, 469-472 (1951).	quant. forb.
Hey, P.	Z. Physik 157, 79-88 (1959).	emiss.
Gaustad, J. E. & Spitzer, Jr., L.	Astrophys. J. 134, 771-776 (1961).	estim.

*See also Table 1.

AUTHOR	JOURNAL	CLASSIFICATION
Foster, E. W.	Proc. Phys. Soc. London A 80, 882-893 (1962).	emiss.
Czyzak, S. J. & Krueger, T. K.	Monthly Notices Roy. Astron. Soc. 126, 177-194 (1963).	quant. forb.

Cl III

Gaustad, J. E. & Spitzer, Jr., L.	Astrophys. J. 134, 771-776 (1961).	estim.
Czyzak, S. J. & Krueger, T. K.	Monthly Notices Roy. Astron. Soc. 126, 177-194 (1963).	quant. forb.

Cl IV

Czyzak, S. J. & Krueger, T. K.	Monthly Notices Roy. Astron. Soc. 126, 177-194 (1963).	quant. forb.

Cl V

Nikitin, A. A. & Yakubovskii, O. A.	Soviet Phys.-Doklady 9, 409-411 (1964).	quant. forb.

Cl VII

Stewart, J. C. & Rotenberg, M.	Phys. Rev. 140, 1508A-1519A (1965).	quant.

Cl XIII

Nikitin, A. A. & Yakubovskii, O. A.	Soviet Phys.-Doklady 9, 409-411 (1964).	quant. forb.

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Co (Cobalt)*

Co I

Bouma, T.	Thesis Utrecht (1930).	emiss., rel.
Ornstein, L. S. & Bouma, T.	Phys. Rev. 36, 679-693 (1930).	emiss., rel.
King, R. G., Parnes, B. R., Davis, M. H. & Olsen, K. H.	J. Opt. Soc. Am. 45, 350-353 (1955).	absorpt., rel.

*See also Table 1.

AUTHOR	JOURNAL	CLASSIFICATION
Allen, C. W. & Asaad, A. S.	Monthly Notices Roy. Astron. Soc. 117, 36-49 (1957).	emiss.
Hinnov, E. & Kohn, H.	J. Opt. Soc. Am. 47, 156-162 (1957).	emiss.
Ostrovskii, Yu. I. & Penkin, N. P.	Optika i Spektroskopiya 5, 345-353 (1958) (O.T.P.1).	hook, rel.
Varsavsky, C. M.	Thesis Harvard (1958).	quant.
Addink, N. W. H.	Spectrochim. Acta 15, 349-359 (1959).	emiss.
Allen, C. W.	Monthly Notices Roy. Astron. Soc. 121, 299-332 (1960).	comm. & CA
Morozova, N. P. & Startsev, G. P.	Optics and Spectroscopy (U.S.S.R.) 17, 174-176 (1964).	emiss.
Lawrence, G. M., Link, J. K. & King, R. B.	Astrophys. J. 141, 293-307 (1965).	absorpt.
Stewart, J. C. & Rotenberg, M.	Phys. Rev. 140, 1508A-1519A (1965).	quant.

Co II

AUTHOR	JOURNAL	CLASSIFICATION
Gruzdev, P. F.	Optics and Spectroscopy (U.S.S.R.) 13, 169-172 (1962).	quant., rel.

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Cr (Chromium)*

Cr I

AUTHOR	JOURNAL	CLASSIFICATION
Frerichs, R.	Z. Physik 31, 305-310 (1925).	emiss., rel.
Frerichs, R.	Ann. Physik 81, 807-845 (1926).	emiss., rel.
Allen, J. S. V. & Hesthal, C. E.	Phys. Rev. 47, 926-931 (1935).	emiss., rel.
Rozhdestvenskii, D. S. & Penkin, N. P.	Izvest. Akad. Nauk S.S.S.R. Ser. Fiz. 5, 97-101 (1941) (O.T.P. 1).	hook, rel.
Rozhdestvenskii, D. S. & Penkin, N. P.	J. Phys. (U.S.S.R.) 5, 319-337 (1941).	hook, rel. & comm.
Penkin, N. P.	Zhur. Eksptl. i Teoret. Fiz. 17, 355-365 (1947) (O.T.P. 1).	hook, rel.
Penkin, N. P.	Zhur. Eksptl. i Teoret. Fiz. 17, 1114-1121 (1947) (O.T.P. 1).	hook, rel.
Wilson, O. C.	Astrophys. J. 107, 126-150 (1948).	misc., rel.
Estabrook, F. B.	Thesis California Institute of Technology (1950).	absorpt.
Hill, A. J.	Thesis California Institute of Technology (1950).	absorpt. rel.
Estabrook, F. B.	Astrophys. J. 113, 684-689 (1951).	absorpt.

*See also Table 1.

AUTHOR	JOURNAL	CLASSIFICATION
Hill, A. J. & King, R. B.	J. Opt. Soc. Am. 41, 315-321 (1951).	absorpt., rel.
Huldt, L. & Lagerqvist, A.	Arkiv Fysik 5, 91-95 (1951).	emiss.
Estabrook, F. B.	Astrophys. J. 115, 571-572 (1952).	comm.
Huldt, L. & Lagerqvist, A.	J. Opt. Soc. Am. 42, 142 (1952).	emiss.
Davis, M. H., Routly, P. M. & King, R. B.	Proceedings of the National Science Foundation Conference on Stellar Atmospheres, Indiana Univ. 47-49 (1954).	absorpt.
Mitrofanova, L. A.	Pulkovo. Astronomicheskaia Observatoriia. Izvestiia 19, #152, 100-102 (1954) (O.T.P.1).	emiss., rel.
Bell, G. D.	Thesis California Institute of Technology (1956-1957).	absorpt.
Nikonova, E. I. & Prokof'ev, V. K.	Optika i Spektroskopiya 1, 290-297 (1956) (transl.).	hook, rel.
Allen, C. W. & Asaad, A. S.	Monthly Notices Roy. Astron. Soc. 117, 36-49 (1957).	emiss.
Hinnov, E. & Kohn, H.	J. Opt. Soc. Am. 47, 156-162 (1957).	emiss.
Ostrovskii, Yu. I. & Penkin, N. P.	Optika i Spektroskopiya 3, 193-201 (1957) (O.T.P.1) (AD 266 652).	hook
Dvornikova, I. U. & Nagibina, I. M.	Optika i Spektroskopiya 4, 421-429 (1958) (O.T.P.2).	emiss., rel.
Addink, N. W. H.	Spectrochim. Acta 15, 349-359 (1959).	emiss.
Allen, C. W.	Monthly Notices Roy. Astron. Soc. 121, 299-332 (1960).	comm. & CA
Boyarchuk, M. E. & Boyarchuk, A. A.	Akademiia Nauk S.S.S.R. Krymskaia astrofizecheskaia observatoriia. Izvestiia 22, 234-256 (1960) (O.T.P. 1).	comm.
Wilkerson, T. D.	Thesis Univ. Michigan (1961).	emiss.
Charatis, G.	Thesis Univ. Michigan (1962).	emiss.
Charatis, G. & Wilkerson, T. D.	Physics of Fluids 5, 1661-1662 (1963).	comm.
Morozova, N. P. & Startsev, G. P.	Optics and Spectroscopy (U.S.S.R.) 17, 174-176 (1964).	emiss.
Hutcherson, J. W.	Master Thesis Southern Missionary College (1964).	emiss., rel.
Lawrence, G. M., Link, J. K. & King, R. B.	Astrophys. J. 141, 293-307 (1965).	absorpt.
Stewart, J. C. & Rotenberg, M.	Phys. Rev. 140, 1508A-1519A (1965).	quant.

Cr II

Allen, J. S. V. & Hesthal, C. E.	Phys. Rev. 47, 926-931 (1935).	emiss., rel.
Wilson, O. C.	Astrophys. J. 107, 126-150 (1948).	misc., rel.

AUTHOR	JOURNAL	CLASSIFICATION
Zagorianskaya, E. U.	Zhur. Eksptl. i Teoret. Fiz. 19, 447-450 (1949) (O.T.P. 1).	emiss. rel.
Aller, L. H., Hazen, M., Doherty, L., Grant, G., Jugaku, J., Spiegel, E. & Waddell, J.	Publications of the Observatory, Univ. of Michigan (Feb. 19, 1954).	misc., rel.
Boyarchuk, M. E. & Boyarchuk, A. A.	Akademiia Nauk S.S.S.R. Krymskaia astrofizecheskaia observatoriia. izvestiia 22, 234-256 (1960) (O.T.P. 1).	comm., rel.
Groth, H. G.	Z. Astrophys. 51, 231-285 (1961).	misc.
Wilkerson, T. D.	Thesis Michigan (1961).	emiss.
Aller, L. H.	Univ. of Michigan, Dept. of Astronomy Technical Note #3 (1962).	misc.
Charatis, G.	Thesis Univ. Michigan (1962).	emiss.
Shackleford, W. L.	J. Quant. Spectrosc. Radiat. Transfer 5, 303-312 (1965).	emiss.

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Cs (Cesium)*

Cs I

Füchtbauer, C. & Hofmann, W.	Ann. Physik 43, 96-134 (1914).	absorpt., rel.
Füchtbauer, C.	Physik. Z. 21, 322-324 (1920).	absorpt.
Füchtbauer, C. & Joos, G.	Physik. Z. 23, 73-80 (1922).	absorpt.
Tolman, R. C.	Phys. Rev. 23, 693-709 (1924).	comm.
Bleeker, C. E.	Thesis Utrecht (1928).	emiss., rel.
Prokof'ev, V. K.	Z. Physik 57, 387-393 (1929).	hook forb., rel.
Waibel, F.	Z. Physik 53, 459-482 (1929).	absorpt.
Minkowski, R. & Mühlenbruch, W.	Z. Physik 63, 198-209 (1930).	misc.
Muto, T.	Proc. Phys.-Math. Soc. Japan 12, 93-100 (1930).	quant.
Schütz, W.	Z. Physik 64, 682-696 (1930).	absorpt., rel.
Prokof'ev, V. K.	Zhur. Eksptl. i Teoret. Fiz. 1, 123-127 (1931) (O.T.P. 1).	hook forb., rel.
Filippov, A. N.	Zhur. Eksptl. i Teoret. Fiz. 2, 24-41 (1932) (O.T.P. 1).	hook, rel.
Rubinowicz, A. & Blaton, J.	Ergeb. exakt. Naturw. 11, 176-217 (1932).	comm.
Ornstein, L. S. & Key, J.	Physica 1, 945-952 (1934).	comm., rel.

*See also Table 1.

AUTHOR	JOURNAL	CLASSIFICATION
Prokof'ev, V. K. & Shtandel, G.	Zhur. Eksptl. i Teoret. Fiz. 4, 359-367 (1934) (O.T.P. 1).	hook, rel.
Heierman, J. H.	Thesis Utrecht (1937).	emiss.
Key, J.	Thesis Utrecht (1937).	emiss., rel.
Frish, S. E.	Izvestiia AAkad. Nauk S.S.S.R. Ser. Fiz. 14, 711-715 (1950) (O.T.P. 2).	emiss., rel.
Kvater, G. S. & Meister, T. G.	Vestnik Leningrad Univ. Ser. Fiz. i Khim. 7, 137-158 (1952) (O.T.P. 1).	hook
Startsev, G. P.	Doklady Akad. Nauk S.S.S.R. 95, 1181-1184 (1954).	hook, rel.
Althoff, K.	Z. Physik 141, 33-42 (1955).	misc.
Bersuker, I. B.	Soviet Phys. - Doklady 2, 167-169 (1957).	estim.
Vainshtein, L. A.	Optika i Spektroskopiya 3, 313-321 (1957) (transl.).	quant.
Archambault, Y., Descoubes, J., Priou, M., Omont, A. & Pebay-Peyroula, J.	J. phys. radium 21, 677-679 (1959).	misc.
Hanus, W.	Bull. acad. polon. sci. Classe 3, 9, 287-291 (1961).	comm.
Hawkins, W. B.	Phys. Rev. 123, 544-547 (1961).	quant.
Heavens, O. S.	J. Opt. Soc. Am. 51, 1058-1061 (1961).	CA
Naqvi, A. M.	Geophysics Corporation of America Technical Report 61-21-A; ASTIA Document 263 459 (1961).	CA
Bucka, H. & Oppen, G.	Ann. Physik 10, 119-120 (1962).	misc.
Roberts, T. G. & Hales, W. L.	U. S. Army Missile Command Redstone Arsenal, Alabama, Report No. RR-TR-62-8 (1962).	CA
Stone, P. M.	Thesis Univ. of Michigan (1962).	quant.
Stone, P. M.	Phys. Rev. 127, 1151-1156 (1962).	quant.
Vainshtein, L. A.	Transactions of the P.N. Lebedev Physics Institute 15, part 1, 1-50 (1962) (CBE-TR).	quant.
Anderson, E. M. & Zilitis, V. A.	Optics and Spectroscopy (U.S.S.R.) 16, 211-214 (1963).	quant.
Aarts, J. & Bosch, G.	Physica 30, 1673-1681 (1964).	emiss.
Markova, G. V. & Chaika, M. P.	Optics and Spectroscopy (U.S.S.R.) 17, 170-173 (1964).	misc.
Agnew, L. & Summers, C...	To be published in "Proceedings of Seventh International Conference on Phenomena in Ionized Gases" Beograd, Yugoslavia (1965).	absorpt.
Hertzberg, M. & Holland, R.	J. Quant. Spectrosc. Radiat. Transfer 5, 313-320 (1965).	emiss., rel.
Stewart, J. C. & Rotenberg, M.	Phys. Rev. 140, 1508A-1519A (1965).	quant.

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Cu (Copper)*

Cu I

AUTHOR	JOURNAL	CLASSIFICATION
van Lingen, D.	Thesis Utrecht (1936).	emiss., rel.
van Lingen, D.	Physica 3, 977-994 (1936).	emiss., rel.
King, R. B. & Stockbarger, D. C.	Astrophys. J. 91, 488-502 (1940).	absorpt.
Schuttevaer, J. W., de Bont, M. J. & van den Broek, Th. H.	Physica 10, 544-552 (1943).	emiss., rel.
van den Bold, H.J.	Thesis Utrecht (1945).	emiss., rel.
Davis, M. H., Routly, P. M. & King, R. B.	Proceedings of the National Science Foundation Conference on Stellar Atmospheres, Indiana Univ. 47-49 (1954).	absorpt.
Parchevskii, G. F. & Penkin, N. P.	Soviet Phys. - JETP 1, 382-384 (1955).	hook, rel.
Bell, G. D.	Thesis California Institute of Technology (1956-1957).	absorpt.
Allen, C. W. & Asaad, A. S.	Monthly Notices Roy. Astron. Soc. 117, 36-49 (1957).	emiss.
Bell, G. D.	Astron. J. 62, 7 (1957).	comm.
Ostrovskii, Yu. I. & Penkin, N. P.	Optika i Spektroskopiya 3, 193-201 (1957) (O.T.P.1) (AD 266 652).	hook
Bell, G. D., Davis, M. H., King, R. B. & Routly, P. M.	Astrophys. J. 127, 775-796 (1958).	absorpt.
Varsavsky, C. M.	Thesis Harvard (1958).	quant.
Addink, N. W. H.	Spectrochim. Acta 15, 349-359 (1959).	emiss.
Vidale, G. L.	Technical Information Series Report R60SD331, General Electric Co., Space Science Laboratory (1960) (AD 237 918).	absorpt.
Dickerman, P. J. & Deuel, R. W.	J. Quant. Spectrosc. Radiat. Transfer 4, 807-817 (1964).	emiss., rel.
Riemann, M.	Z. Physik 179, 38-51 (1964).	emiss.
Stewart, J. C. & Rotenberg, M.	Phys. Rev. 140, 1508A-1519A (1965).	quant.

Cu XIX

AUTHOR	JOURNAL	CLASSIFICATION
Stewart, J. C. & Rotenberg, M.	Phys. Rev. 140, 1508A-1519A (1965).	quant.

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*See also Table 1.

AUTHOR	JOURNAL	CLASSIFICATION
	F (Fluorine)*	
	F I	
Bagus, P. S.	U. S. Atomic Energy Commission ANL-6959 (1964).	SCF
	F II	
Garstang, R. H.	Monthly Notices Roy. Astron. Soc. 111, 115-124 (1951).	quant. forb.
Yutsis, A. P. & Vizbaraite, Ia. I.	Trudy Akademii Nauk Litovskoi S.S.R., Seriia B, 1 (17) 3-15 (1959).	quant. forb.
Bolotin, A. B., Shironas, I. I. & Braiman, M. Yu.	Vilniaus Valstybinio v. Kapsuko vardo universiteto Mokslo Darbai 33, matematika fizika 9, 107-112 (1960).	quant.
	F III	
Levinson, I. B., Bolotin, A. B. & Levin, L. I.	Trudy Vil'nyusskogo un. 5, 49-55 (1956) (transl.).	quant.
Yutsis, A. P. & Vizbaraite, Ia. I.	Trudy Akademii Nauk Litovskoi S.S.R., Seriia B, 1 (17) 3-15 (1959).	quant. forb.
	F IV	
Garstang, R. H.	Monthly Notices Roy. Astron. Soc. 111, 115-124 (1951).	quant. forb.
Yilmaz, H.	Phys. Rev. 100, 1148-1153 (1955).	quant. forb.
Bolotin, A. B., Levinson, I. B. & Levin, L. I.	Soviet Phys. - JETP 2, 391-395 (1956).	quant.
	F V	
Bolotin, A. B. & Yutsis, A. P.	Zhur. Eksptl. i Teoret. Fiz. 24, 537-543 (1953) (O.T.P. 1).	quant.
Nikitin, A. A. & Yakubovskii, O. A.	Soviet Phys.-Doklady 9, 409-411 (1964).	quant. forb.
	F VII	
Kantseriavichius, A.	Litovskii Fizicheskii Sbornik 2, 245-257 (1962).	quant.

*See also Table 1.

AUTHOR	JOURNAL	CLASSIFICATION
Cohen, M. & Dalgarno, A.	Proc. Roy. Soc. London A 275, 492-503 (1963).	quant.
Flannery, M. R. & Stewart, A. L.	Monthly Notices Roy. Astron. Soc. 126, 387-392 (1963).	quant.
Weiss, A. W.	Astrophys. J. 138, 1262-1276 (1963).	SCF
Berkner, K. H., Cooper III, W. S., Kaplan, S. N. & Pyle, R. V.	Phys. Letters 16, 35-36 (1965).	life

* * * * *

Fe (Iron)*

Fe I

van Milaan, J. B.	Z. Physik 34, 921-923 (1925).	emiss., rel.
Frerichs, R.	Ann. Physik 81, 807-845 (1926).	emiss., rel.
van Milaan, J. B.	Thesis Utrecht (1926).	emiss., rel.
van Milaan, J. B.	Z. Physik 38, 427-439 (1926).	emiss., rel.
Russell, H. N.	Astrophys. J. 78, 239-297 (1933).	estim.
Allen, C. W.	Monthly Notices Roy. Astron. Soc. 96, 145-148 (1935).	emiss.
King, R. B. & King, A. S.	Astrophys. J. 82, 377-395 (1935).	absorpt., rel.
van Driel, H.	Thesis Utrecht (1935).	emiss., rel.
Menzel, D. H. & Goldberg, L.	Astrophys. J. 85, 40-41 (1936).	comm.
King, R. B. & King, A. S.	Astrophys. J. 87, 24-39 (1938).	absorpt., rel.
Rozhdestvenskii, D. S. & Penkin, N. P.	Izvest. Akad. Nauk S.S.S.R. Ser. Fiz. 5, 97-101 (1941) (O.T.P.1).	hook, rel.
Rozhdestvenskii, D. S. & Penkin, N. P.	J. Phys. (U.S.S.R.) 5, 319-337 (1941).	hook, rel. comm.
King, R. B.	Astrophys. J. 95, 78-81 (1942).	absorpt.
Sobolev, N. N.	Zhur. Eksptl. i Teoret. Fiz. 13, 131-136 (1943) (O.T.P. 1).	emiss., rel.
Petrie, W.	Can. J. Research A 25, 42-48 (1947).	comm.
Gottschalk, W. M.	Astrophys. J. 108, 326-337 (1948).	quant., rel.
Carter, W. W.	Thesis California Institute of Technology (1949).	emiss., rel.
Carter, W. W.	Phys. Rev. 76, 962-966 (1949).	emiss., rel.
Crosswhite, H. M.	Spectrochim. Acta 4, 122-151 (1950).	emiss., rel.
Kopfermann, H. & Wessel, G.	Z. Physik 130, 100-108 (1951).	absorpt.
Mitrofanova, L. A.	Pulkovo. Astronomicheskaia observatoriia. Izvestiia 19, #149, 81-139 (1952) (O.T.P. 1).	emiss., rel.

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*See also Table 1.

AUTHOR	JOURNAL	CLASSIFICATION
Aarts, J., Harting, D. & Bakker, C. J.	Physica 20, 1250-1258 (1954).	emiss., rel.
Parchevskii, G. F. & Penkin, N. P.	Vestnik Leningrao Univ. Ser. Fiz. i Khim. 9, #11, 113-118 (1954) (transl. by J. Tech., Harvard College Observatory, June 1964).	hook, rel.
Parchevski, G. F. & Penkin, N. P.	Bull. Acao. Sci. U.S.S.R. Phys. Ser. 19, 4-5 (1955).	comm.
Bell, G. D.	Thesis California Institute of Technology (1956-1957).	absorpt.
Osberghaus, O. & Ziock, K.	Z. Naturforsch. 11a, 762-763 (1956).	life
Allen, C. W. & Asaad, A. S.	Monthly Notices Roy. Astron. Soc. 117, 36-49 (1957).	emiss.
Bell, G. D.	Astron. J. 62, 7 (1957).	comm.
Hinnov, E. & Kohn, H.	J. Opt. Soc. Am. 47, 156-162 (1957).	emiss.
Ziock, K.	Z. Physik 147, 99-112 (1957).	life
Bell, G. D., Davis, M. H., King, R. B. & Routly, P. M.	Astrophys. J. 127, 775-796 (1958).	absorpt.
Crosswhite, H. M.	Johns Hopkins Spectroscopic Report No. 13 (1958).	compil.
Mel'nikov, O. A.	Pulkovo. Astronomicheskaia observatoriia. Izvestiia 20, #6, 28-43 (1958) (O.T.P. 1).	comm.
Nagibina, I. M.	Bull. Acad. Sci. U.S.S.R. Phys. Ser. 22, 678-679 (1958).	emiss., rel.
Nagibina, I. M.	Optika i Spektroskopiya 4, 430-437 (1958) (O.T.P.2).	emiss., rel.
Aodink, N. W. H.	Spectrochim. Acta 15, 349-359 (1959).	emiss.
Hefferlin, R.	J. Opt. Soc. Am. 49, 680-685 (1959).	emiss., rel.
Hefferlin, R.	J. Opt. Soc. Am. 49, 948-949 (1959).	emiss., rel.
Zwaan, A.	Bulletin Astronomical Institutes Netherlands 14, 288-298 (1959).	misc., rel.
Allen, C. W.	Monthly Notices Roy. Astron. Soc. 121, 299-332 (1960).	comm. & CA
Boyarchuk, M. E. & Boyarchuk, A. A.	Akademiia Nauk S.S.S.R. Krymskaia astrofizecheskaia observatoriia. Izvestiia 22, 234-256 (1960) (O.T.P. 1).	comm.
Belousova, I. M. & Gurevich, D. B.	Optics and Spectroscopy (U.S.S.R.) 10, 206-207 (1961).	comm.
Korolev, F. A. & Kvaratskheli, Yu. K.	Optics and Spectroscopy (U.S.S.R.) 10, 200-202 (1961).	emiss., rel.
Letfus, V.	Central Astronomical Institutes of Czechoslovakia: Bulletin 12, 161-167 (1961).	emiss. & comm.
Letfus, V.	J. Opt. Soc. Am. 51, 1151 (1961).	comm.
Ottinger, C. & Ziock, K.	Z. Naturforsch. 16a, 720 (1961).	life
Jefferies, J. T. & Orrall, F. Q.	Astrophys. J. 135, 109-121 (1962).	estim.

AUTHOR	JOURNAL	CLASSIFICATION
Korolev, F. A. & Kvaratskheli, Iu. K.	Fiz. Probl. Spektroskopii, Akad. Nauk S.S.S.R. Materialy 13-Go (Trinadtsatago) Soveshch. Leningrad 109-111 (1962).	emiss., rel.
Letfus, V.	Central Astronomical Institute of Czechoslavakia: Bulletin 13, 98-106 (1962).	comm.
Morozova, N. G., Startsev, G. P. & Frish, M. S.	Fiz. Probl. Spektroskopii, akad. Nauk S.S.S.R. Materialy 13-Go (Trinadtsatago) Soveshch. Leningrad 45-51 (1962).	emiss., rel.
Roder, O.	Z. Astrophysik 55, 38-45 (1962).	emiss.
Letfus, V.	Central Atronomical Institutes of Czechoslavakia: Bulletin 14, 155-166 (1963).	comm.
Margoshes, M. & Scribner, B. F.	J. Research Nat. Bur. Standards 67A, 561-568 (1963).	emiss., rel.
Aarts, J. & Bosch, G.	Physica 30, 1673-1681 (1964).	emiss.
Corliss, C. H. & Warner, B.	Astrophys. J. Suppl. Ser. 8, #83 395-438 (1964).	emiss., compil. & comm.
Morozova, N. P. & Startsev, G. P.	Optics and Spectroscopy (U.S.S.R.) 17, 174-176 (1964).	emiss.
Prokof'ev, V. K., Nikonova, E. I., Gruzdev, P. F. & Frish, M. S.	Akademiia Nauk S.S.S.R. Krymskaia astrofizicheskaia observatoriia. Izvestiia 31, 281-324 (1964).	comm.
Valters, A. K., Nikonova, E. I. & Startsev, G. P.	Optics and Spectroscopy (U.S.S.R.) 16, 393-395 (1964).	absorpt., rel.
Valters, A. K. & Startsev, G. P.	Optics and Spectroscopy (U.S.S.R.) 17, 262-264 (1964).	hook, rel.
King, R. B., Olsen, K. H. & Corliss, C. H.	Astrophys. J. 141, 354-363 (1965).	absorpt., rel.
Krysmanski, K. H.	Ann. Physik 15, 207-224 (1965).	emiss., rel.
Shore, B. W.	Astrophys. J. 142, 94-105 (1965).	quant., SCF
Stewart, J. C. & Rotenberg, M.	Phys. Rev. 140, 1508A-1519A (1965).	quant.

Fe II

AUTHOR	JOURNAL	CLASSIFICATION
Clarkson, W.	Phil. Mag. 7, 98-105 (1929).	emiss., rel.
Rubinowicz, A.	Z. Physik 65, 662-676 (1930).	quant., rel.
Russell, H. N.	Astrophys. J. 78, 239-297 (1933).	estim.
Sobolev, N. N.	Zhur. Eksptl. i Teoret. Fiz. 13, 131-136 (1943) (O.T.P. 1).	emiss., rel.
Crosswhite, H. M.	Spectrochim. Acta 4, 122-151 (1950).	emiss., rel.
Mitrofanova, L. A.	Pulkovo. Astronomicheskaia observatoriia. Izvestiia 19, #151, 45-48 (1953).	emiss., rel.

AUTHOR	JOURNAL	CLASSIFICATION
Aller, L. H., Hazen, M., Doherty, L., Grant, G., Jugaku, J., Spiegel, E. & Waddell, J.	Publications of the Observatory, Univ. of Michigan (Feb. 19, 1954).	misc., rel.
Mel'nikov, O. A.	Soviet Astronomy - AJ 3, 381-388 (1959).	misc. & misc. forb., rel.
Boyarchuk, M. E. & Boyarchuk, A. A.	Akademiia Nauk S.S.S.R. Krymskaia astrofizecheskaia observatoriia. Izvestiia 22, 234-256 (1960) (O.T.P. 1).	comm.
Groth, H. G.	Z. Astrophys. 51, 231-285 (1961).	misc.
Aller, L. H.	Univ. of Michigan, Dept. of Astronomy Technical Note #3 (1962).	misc.
Garstang, R. H.	Monthly Notices Roy. Astron. Soc. 124, 321-341 (1962).	quant. forb.
Garstang, R. H.	Communications from the University of London Observatory #57 (1962).	misc.
Gruzdev, P. F.	Fiz. Probl. Spektroskopii, Akad. Nauk S.S.S.R., Materialy 13-Go (Trinadtsatago) Soveshch., Leningrad 36-39 (1962) (transl. by J. L. Tech, Harvard College Observatory).	quant., rel.
Roder, O.	Z. Astrophysik 55, 38-45 (1962).	emiss.
Baschek, B, Kegel, W. H. & Traving, G.	Z. Astrophysik 56, 282-284 (1963).	misc.
Morozova, N. G. & Startsev, G. P.	Optics and Spectroscopy (U.S.S.R.) 18, 505-506 (1965).	emiss., rel.

Fe III

AUTHOR	JOURNAL	CLASSIFICATION
Garstang, R. H.	Monthly Notices Roy. Astron. Soc. 117, 393-405 (1957).	quant. forb.
Gaustad, J. E. & Spitzer, Jr., L.	Astrophys. J. 134, 771-776 (1961).	estim.
Aller, L. H.	Univ. of Michigan, Dept. of Astronomy Technical Note #3 (1962).	misc.

Fe IV

AUTHOR	JOURNAL	CLASSIFICATION
Garstang, R. H.	Monthly Notices Roy. Astron. Soc. 118, 572-584 (1958).	quant. forb.

AUTHOR	JOURNAL	CLASSIFICATION
	Fe V	
Garstang, R. H.	Monthly Notices Roy. Astron. Soc. 117, 393-405 (1957).	quant. forb.
	Fe X	
Edlén, B.	Z. Astrophys. 22, 30-64 (1942).	quant. forb.
Huang, K.	Astrophys. J. 101, 187-195 (1945).	misc. forb.
Pecker, C.	Compt. rend. 250, 3779-3781 (1960).	misc.
Garstang, R. H.	Ann. Astrophys. 25, 109-117 (1962).	comm.
Krueger, T. K. & Czyzak, S. J.	Memoirs Roy. Astron Soc. 69, 145-182 (1965).	quant. forb.
	Fe XI	
Edlén, B.	Z. Astrophys. 22, 30-64 (1942).	quant. forb.
Huang, K.	Astrophys. J. 101, 187-195 (1945).	misc. forb.
Krueger, T. K. & Czyzak, S. J.	Memoirs Roy. Astron Soc. 69, 145-182 (1965).	quant. forb.
	Fe XII	
Krueger, T. K. & Czyzak, S. J.	Memoirs Roy. Astron Soc. 69, 145-182 (1965).	estim. forb.
	Fe XIII	
Edlén, B.	Z. Astrophys. 22, 30-64 (1942).	quant. forb.
Huang, K.	Astrophys. J. 101, 187-195 (1945).	misc. forb.
Kurt, V. G.	Soviet Astronomy-A.J. 6, 620-624 (1963).	quant. forb.
Krueger, T. K. & Czyzak, S. J.	Memoirs Roy. Astron Soc. 69, 145-182 (1965).	quant. forb.
	Fe XIV	
Edlén, B.	Z. Astrophys. 22, 30-64 (1942).	quant. forb.
Huang, K.	Astrophys. J. 101, 187-195 (1945).	misc. forb.
Gold, M. T.	Monthly Notices Roy. Astron. Soc. 109, 471-477 (1949).	SCF
Froese, C.	Monthly Notices Roy. Astron. Soc. 117, 615-621 (1957).	SCF
Garstang, R. H.	Ann. astrophys. 25, 109-117 (1962).	quant. forb. & CA
Krueger, T. K. & Czyzak, S. J.	Memoirs Roy. Astron Soc. 69, 145-182 (1965).	quant. forb.

AUTHOR	JOURNAL	CLASSIFICATION
	Fe XV	
Edlén, B.	Z. Astrophys. 22, 30-64 (1942).	quant. forb.
Osterbrock, D. E.	Astrophys. J. 114, 469-472 (1951).	quant. forb.
Blaha, M.	Central Astronomical Institutes of Czechoslovakia: Bulletin 8, 34-37 (1957).	quant. forb.
Firor, J. & Zirin, H.	Astrophys. J. 135, 122-137 (1962).	quant.
Froese, C.	Astrophys. J. 140, 361-365 (1964).	SCF
Krueger, T. K. & Czyzak, S. J.	Memoirs Roy. Astron Soc. 69, 145-182 (1965).	quant. & quant. forb.
	Fe XVI	
Froese, C.	Astrophys. J. 140, 361-365 (1964).	SCF
Krueger, T. K. & Czyzak, S. J.	Memoirs Roy. Astron Soc. 69, 145-182 (1965).	quant. & quant. forb.
Stewart, J. C. & Rotenberg, M.	Phys. Rev. 140, 1508A-1519A (1965).	quant.

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Ga (Gallium)*

Ga I

Allen, C. W.	Monthly Notices Roy. Astron. Soc. 117, 622-628 (1957).	comm.
Allen, C. W. & Asaad, A. S.	Monthly Notices Roy. Astron. Soc. 117, 36-49 (1957).	emiss.
Ostrovskii, Yu. I. & Penkin, N. P.	Optika i Spektroskopiya 4, 719-724 (1958) (O.T.P.1).	hook
Ostrovskii, Yu. I., Penkin, N. P. & Shabanova, L. N.	Bull. Acad. Sci. U.S.S.R. Phys. Ser. 22, 720-724 (1958).	hook
Brehm, B., Demtröder, W. & Osberghaus, O.	Z. Naturforsch. 16a, 843 (1961).	life
Demtröder, W.	Thesis Bonn (1961).	life
Hanus, W.	Bull. acad. polon. sci. Classe 3, 8, 629-636 (1961).	comm.
Ottinger, C. & Ziock, K.	Z. Naturforsch. 16a, 720 (1961).	life
Demtröder, W.	Z. Physik 166, 42-55 (1962).	life
Penkin, N. P. & Shabanova, L. N.	Optics and Spectroscopy (U.S.S.R.) 14, 5-8 (1963).	hook
Penkin, N. P. & Shabanova, L. N.	Optics and Spectroscopy (U.S.S.R.) 14, 87-88 (1963).	hook
Lubowiecka, T.	Acta Phys. Polon. 25, 849-851 (1964).	emiss., rel.

*See also Table 1.

AUTHOR	JOURNAL	CLASSIFICATION
Lawrence, G. M., Link, J. K. & King, R. B.	Astrophys. J. 141, 293-307 (1965).	absorpt.
Penkin, N. P. & Shabanova, L. N.	Optics and Spectroscopy (U.S.S.R.) 18, 504 (1965).	hook, rel. & hook
Penkin, N. P. & Shabanova, L. N.	Optics and Spectroscopy (U.S.S.R.) 18, 535-537 (1965).	comm.

Ga II

Helliwell, T. M.	Thesis California Institute of Technology (1963).	quant.
Helliwell, T. M.	Phys. Rev. 135, A325-A331 (1964).	quant.

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Ge (Germanium)*

Ge I

Khokhlov, M. Z.	Akademiia Nauk S.S.S.R. Krymskaia astrofizecheskaia observatoriia. Izvestiia 26, 52-62 (1961).	quant.
Khokhlov, M. Z.	Akademiia Nauk S.S.S.R. Krymskaia astrofizecheskaia observatoriia. Izvestiia 28, 277-287 (1962).	absorpt., rel.
Khokhlov, M. Z.	Akademiia Nauk S.S.S.R. Krymskaia astrofizecheskaia observatoriia. Izvestiia 29, 131-140 (1963).	emiss., rel., absorpt., rel. & comm.
Slavenas, I. Yu. Yu.	Optics and Spectroscopy (U.S.S.R.) 16, 214-216 (1964).	hook, rel.

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H (Hydrogen)*

H I

Hoyt, F. C.	Phil. Mag. 47, 826-831 (1924).	quant., rel.
Slack, F. G.	Phys. Rev. 28, 1-12 (1926).	life
Crew, W. H. & Hulburt, E. O.	Phys. Rev. 29, 843-847 (1927).	emiss., rel.
Sugiura, M. Y.	J. phys. radium 8, 113-124 (1927).	quant.
Wien, W.	Münch. tierärztl. Wochschr. 89-91 (1927).	canal
Carst, A. & Ladenburg, R.	Z. Physik 48, 192-204 (1928).	hook, rel.
Kupper, A.	Ann. Physik 86, 511-529 (1928).	quant.

*See also Table 1.

AUTHOR	JOURNAL	CLASSIFICATION
Slack, F. G.	Phys. Rev. 31, 527-532 (1928).	quant.
Snoek, J. L. & Ornstein, L. S.	Z. Physik 50, 600-608 (1928).	absorpt., rel.
Sugiura, Y.	Science Papers of the Institute of Physical and Chemical Research 11, 1-80 (1929).	quant.
Menzel, D. H.	Publ. Lick Observatory 17, 232-238 (1930).	comm. & estim.
Stevenson, A. F.	Proc. Roy. Soc. London A 128, 591-599 (1930).	quant. forb.
Maxwell, L. R.	Phys. Rev. 38, 1664-1686 (1931).	comm.
Russell, H. N.	Astrophys. J. 78, 239-297 (1933).	estim.
Griffiths, J. H. E.	Proc. Roy. Soc. London A 147, 547-554 (1934).	life
Woolley, R.	Monthly Notices Roy. Astron. Soc. 95, 101-116 (1934).	compil.
Kreisler, J.	Acta Phys. Polon. 4, 151-161 (1935).	quant.
Menzel, D. H. & Pekeris, C. L.	Monthly Notices Roy. Astron. Soc. 96, 77-111 (1935).	quant.
Rudnick, P.	Phys. Rev. 48, 807-811 (1935).	quant.
Breit, G. & Teller, E.	Astrophys. J. 91, 215-238 (1940).	quant. forb.
Biermann, L.	Physik. Z. 44, 232-233 (1943).	quant.
Veselov, M. G.	Zhur. Eksptl. i Teoret. Fiz. 19, 959-964 (1949) (ATS transl.).	quant.
Spitzer, Jr., L. & Greenstein, J. L.	Astrophys. J. 114, 407-420 (1951).	quant. forb.
Kipper, A. Y.	Tartu. Estonia. Ülikook, Tahetorn 32, 63-93 (1952) (O.T.P. 2).	quant. forb.
Wild, J. P.	Astrophys. J. 115, 206-221 (1952).	quant.
Harriman, J. M.	Phys. Rev. 101, 594-598 (1956).	quant.
Bethe, H. A. & Salpeter, E. E.	"Quantum Mechanics of One and Two Electron Atoms" (Academic Press, New York, 1957).	compil.
Green, L. C., Rush, P. P. & Chandler, C. D.	Astrophys. J. Suppl. Ser. 3, 37-50 (1957).	quant.
Fite, W. L., Brackmann, R. T., Hummer, D. G. & Stebbings, R. F.	Phys. Rev. 116, 363-367 (1959).	life forb.
Shapiro, J. & Breit, G.	Phys. Rev. 113, 179-181 (1959).	quant. forb.
Demidov, V. P.	Astronomicheskii Zhurnal 38, 1065-1068 (1961).	quant. forb.
Herdan, R. & Hughes, T. P.	Astrophys. J. 133, 294-298 (1961).	quant.
Herdan, R. & Hughes, T. P.	Astrophys. J. 134, 1028 (1961).	comm.
Karzas, W. J. & Latter, R.	Astrophys. J. Suppl. Ser. 6, 167-212 (1961).	quant.
Vainshtein, L. A.	Transactions of the P.N. Lebedev Physics Institute 15, part 1, 1-50 (1962) (CBE-TR).	quant.
Morse, T. A. & Kaufman, F.	J. Chem. Phys. 42, 1785-1790 (1965).	absorpt.

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He (Helium)*

He I

AUTHOR	JOURNAL	CLASSIFICATION
Levy, S.	Z. Physik 72, 578-586 (1931).	hook, rel.
Vinti, J. P.	Phys. Rev. 42, 632-640 (1932).	quant.
Russell, H. N.	Astrophys. J. 78, 239-297 (1933).	estim.
Wheeler, J. A.	Phys. Rev. 43, 258-263 (1933).	quant.
Körwien, H.	Z. Physik 91, 1-36 (1934).	quant.
Kreisler, J.	Acta Phys. Polon. 4, 151-161 (1935).	quant.
Hylleraas, E. A.	Z. Physik 106, 395-404 (1937).	quant.
Goldberg, L.	Astrophys. J. 90, 414-428 (1939).	quant.
Breit, G. & Teller, E.	Astrophys. J. 91, 215-238 (1940).	quant. forb.
Goldberg, L.	Astrophys. J. 93, 244-249 (1941).	quant. forb.
Romberg, W.	Phys. Rev. 71, 706-711 (1947).	SCF
Huang, Su-Shu	Astrophys. J. 108, 354-372 (1948).	comm.
Bates, D. R. & Damgaard, A.	Phil. Trans. Roy. Soc. London. Ser. A. 242, 101-122 (1949).	CA
Bates, D. R. & Damgaard, A.	Phil. Trans. Roy. Soc. London Ser. A. 242, 101-122 (1949).	CA
Veselov, M. G.	Zhur. Eksptl. i Teoret. Fiz. 19, 959-964 (1949) (ATS transl.).	quant.
Brochard, J.	Thesis Paris (1950).	absorpt., rel.
Wellmann, P.	Z. Astrophys. 30, 71-87 (1952).	estim.
Veselov, M. G.	Vestnik Leningrad Univ. Ser. Fiz. i Khim. No. 8, 181-185 (1953) (O.T.P. 1).	quant.
Heron, S., McWhirter, R. W. P. & Rhoderick, E. H.	Nature 174, 564-565(1954).	life
Heron, S., McWhirter, R. W. P. & Rhoderick, E. H.	Proc. Roy. Soc. London A 234 565-582 (1956).	life
Miller, W. F.	Thesis Purdue (1956).	comm.
Vizbaraite, Ya. I., Kantserevichyus, A. I. & Yutsis, A. P.	Optika i Spektroskopiya 1, 9-16 (1956) (O.T.P. 1).	SCF
Yutsis, A. P., Ushpalis, K. K., Kavetskis, V. I. & Levinson, I. B.	Optika i Spektroskopiya 1, 601-605 (1956) (O.T.P. 1).	quant.
Dalgarno, A. & Lynn, N.	Proc. Phys. Soc. London A 70, 802-808 (1957).	estim.
Miller, W. F. & Platzman, R. L.	Proc. Phys. Soc. London A 70, 299-303 (1957).	comm.

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*See also Table 1.

AUTHOR	JOURNAL	CLASSIFICATION
Trefftz, E., Schlüter, A., Dettmar, K. H. & Jörgens, K.	Z. Astrophys. 44, 1-17 (1957).	SCF
Dalgarno, A. & Kingston, A. E.	Proc. Phys. Soc. London A 72, 1053-1060 (1958).	estim.
Mastrup, F. & Wiese, W.	Z. Astrophys. 44, 259-279 (1958).	emiss. rel.
Osherovich, A. L. & Savich, I. G.	Optika i Spektroskopiya 4, 715-718 (1958) (O.T.P.1).	life
Ushpalis, K. K., Kuzmitskite, L. L. & Budrite, S. D.	Trudy Akademii Nauk Litovskoi S.S.R. Seriia B 3 (15) 47-53 (1958).	quant.
Varsavsky, C. M.	Thesis Harvard (1958).	quant.
Aller, L. H. & Jugaku, J.	Astrophys. J. Suppl. Ser. 4, #38, 109-156 (1959).	CA
Bennett, R. G. & Dalby, F. W.	J. Chem. Phys. 31, 434-441 (1959).	life
Dalgarno, A. & Stewart, A. L.	Proc. Phys. Soc. London A 76, 49-55 (1960).	estim.
Decomps, B., Pebay-Peyroula, J. C. & Brossel, J.	Compt. rend. 251, 941-943 (1960) (transl.).	misc.
Gabriel, A. H. & Heddle, D. W.	Proc. Roy. Soc. London A 258, 124-145 (1960).	CA
Kunisz, M. D. & Seguier, J.	J. phys. radium 21, 527-531 (1960).	emiss., rel.
Yutsis, A. P. & Vizbaraite, Ia. I. & Eringis, K. K.	Trudy Akademii Nauk Litovskoi S.S.R., Seriia B, 3 (26) 99-105 (1961) (O.T.P. 2).	quant.
Kantseriavichius, A.	Litovskii Fizicheskii Sbornik 2, 245-257 (1962).	quant.
McLean, E. A.	"Fourth Symposium on Temperature: Its Measurement and Control in Science and Industry" (ed. Herzfeld, C. M., Reinhold Publ., New York 1962).	emiss.
Salpeter, E. E. & Zaidi,	Phys. Rev. 125, 248-255 (1962).	quant.
Vainshtein, L. A.	Transactions of the P.N. Lebedev Physics Institute 15, part 1, 1-50 (1962) (CBE-TR).	quant.
Bötticher, W., Roder, O. & Wobig, K. H.	Z. Physik 175, 480-489 (1963).	emiss.
Geiger, J.	Z. Physik 175, 530-542 (1963).	misc.
Helliwell, T. M.	Thesis California Institute of Technology (1963).	quant.
Holzberlein, T. M.	Thesis Oklahoma Univ. (1963). (AFOSR-62-378).	life
Bakos, J. & Szigetti, J.	Kosp. Fiz. Kut. Int. Kozlemenyek 12, 125-134 (1964).	life
Fowler, R. G., Holzberlein, T. M. Jacobson, C. H. & Corrigan, S. J. B.	Proc. Phys. Soc. (London) A 84, 539-543 (1964).	life
Green, L. C., Kolchin, E. K. & Johnson, N. C.	Submitted for publication in the Transactions of the International Astronomical Union Symposium #26 (1964).	quant.
Helliwell, T. M.	Phys. Rev. 135, A325-A331 (1964).	quant.

AUTHOR	JOURNAL	CLASSIFICATION
Holzberlein, T. M.	Rev. Sci. Instr. 35, 1041-1046 (1964).	life
Kuhn, H. G.	Acta Phys. Polon. 26, 315-321 (1964).	misc.
Kuhn, H. G. & Vaughan, J. M.	Proc. Roy. Soc. London A 277, 297-311 (1964).	misc.
Lincke, R.	Thesis Maryland Univ. (1964) (AFCRL-64-960).	emiss.
McDowell, M. R. C. & Stauffer, A. D.	Physics Letters 12, 207-208 (1964).	quant. forb.
Schiff, B. & Pekeris, C. L.	Phys. Rev. 134, A638-A640 (1964).	quant.
Vidal, C. R.	Z. Naturforsch. 19a, 1018 (164).	emiss., rel.
Altick, P. L. & Moore, E. N.	Phys. Rev. Letters 15, 100-102 (1965).	quant.
Bennett, Jr., W. R. Kindlmann, P. J. & Mercer, G. N.	Applied Optics Supplement 2 of Chemical Lasers 34-57 (1965).	life
Boersch, H. & Reich, H. J.	Optik 22, 289-306 (1965).	misc., rel.
Galleron-Julienne, C. & Descoubes,	Comp. rend. 261, 916-918 (1965).	misc.
Korolyov, F. A. & Odintsov, V. I.	Optics and Spectroscopy (U.S.S.R.) 18, 547-550 (1965).	absorpt.
Kuhn, H. G., Lewis, E. L. & Vaughan, J. M.	Phys. Rev. Letters 15, 687-688 (1965).	comm.
Pendleton, Jr., W. R.	Thesis Univ. of Maryland (1965).	life
Pendleton, W. R. & Hughes, R. H.	Phys. Rev. 138, A683-A687 (1965).	life

He II

AUTHOR	JOURNAL	CLASSIFICATION
Maxwell, L. R.	Phys. Rev. 38, 1664-1686 (1931).	comm.

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Hg (Mercury)*

Hg I

AUTHOR	JOURNAL	CLASSIFICATION
Füchtbauer, C. & Joos, G.	Physik. Z. 23, 73-80 (1922).	absorpt.
Füchtbauer, C., Joos, G. & Dinkelacker, O.	Ann. Physik 71, 204-227 (1923).	absorpt.
Tolman, R. C.	Phys. Rev. 23, 693-709 (1924).	comm.
Wien, W.	Ann. Physik 73, 483-504 (1924).	canal
Skinner, H. W. B.	Proc. Roy. Soc. London A 112, 642-660 (1926).	misc.
Trumpy, B.	Z. Physik 40, 594-617 (1926).	comm.
Hughes, A. L. & Thomas, A. R.	Phys. Rev. 30, 466-472 (1927).	absorpt.
Trumpy, B.	Kgl. Norske Videnskab. Selskabs, Skrifter 1, 1-80 (1927).	absorpt.

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*See also Table 1.

AUTHOR	JOURNAL	CLASSIFICATION
Kunze, P.	Ann. Physik 85, 1013-1057 (1928).	absorpt.
Gaviola, E.	Contribucion al Estudio de las Ciencias. Fisicas y Matematics, La Plata, Argentina 5, 65-75 (1929). Universidad Nacional de la Plata Publicaciones de la Facultad de Ciencias Fisicomatematics (transl.).	comm. forb.
Kopfermann, H. & Tietze, W.	Z. Physik 56, 604-616 (1929).	absorpt.
Ladenburg, R.	Nachr. Akad. Wiss. Göttingen, Math.-physik. Kl. 1-5 (1929).	hook
Webb, H. W. & Messenger, H. A.	Phys. Rev. 33, 319-328 (1929).	life
Ladenburg, R. & Wolfsohn, G.	Z. Physik 63, 616-633 (1930).	hook
Ladenburg, R. & Wolfsohn, G.	Z. Physik 65, 207-208 (1930).	comm.
Randall, R. H.	Phys. Rev. 35, 1161-1169 (1930).	life
Richter, E. F.	Ann. Physik 7, 293-328 (1930).	misc.
Thomas, A. R.	Phys. Rev. 35, 1253-1261 (1930).	absorpt.
Garrett, P. H. & Webb, H. W.	Phys. Rev. 37, 1686 (1931).	life
Garrett, P. H.	Phys. Rev. 40, 779-790 (1932).	life
Mitchell, A. C. G.	Phys. Rev. 43, 887-893 (1933).	comm.
Wolfsohn, G.	Z. Physik 83, 234-247 (1933).	hook
Wolfsohn, G.	Z. Physik 85, 366-372 (1933).	hook
Mitchell, A. C. G. & Murphy, E. J.	Phys. Rev. 45, 759 (1934).	misc.
Mitchell, A. C. G. & Murphy, E. J.	Phys. Rev. 46, 53-58 (1934).	misc.
Opechowski, W.	Z. Physik 109, 485-490 (1938).	comm. forb.
King, G. W. & van Vleck, J. H.	Phys. Rev. 56, 464-465 (1939).	quant. forb., rel.
Schouten, J. W.	Thesis Utrecht (1941).	emiss.
Schouten, J. W.	Physica 10, 672-678 (1943).	emiss., rel.
Schouten, J. W. & Smit, J. A.	Physica 10, 661-671 (1943).	emiss.
Lennuier, R. & Cojan, J. L.	Compt. rend. 231, 1450-1452 (1950).	misc.
Mishra, B.	Phys. Rev. 77, 153 (1950).	SCF
Brossel, J.	Phys. Rev. 83, 210 (1951).	misc.
Brossel, J.	Thesis Paris (1952).	misc.
Brossel, J.	Ann. phys. 7, 622-627 (1952).	misc.
Brossel, J. & Bitter, F.	Phys. Rev. 86, 308-316 (1952).	misc.
Mishra, B.	Proc. Cambridge Phil. Soc. 48, 511-515 (1952).	SCF
Vainshtein, L. A. & Yavorskii, B. M.	Doklady Akad. Nauk S.S.S.R. 87, 919-922 (1952) (O.T.P. 1).	quant.
Vainshtein, L. A. & Yavorskii, B. M.	Zhur. Eksptl. i Teoret. Fiz. 27, 712-718 (1954) (SLA transl. RT-3363).	SCF

AUTHOR	JOURNAL	CLASSIFICATION
Brannen, E., Hunt, F. R., Adlington, R. H. & Nicholls, R. W.	Nature 175, 810-811 (1955).	life
Lebedeva, V. V. & Fabrikant, V. A.	Bull. Acad. Sci. U.S.S.R. Phys. Ser. 19, 2-4 (1955).	emiss., rel. & quant., rel.
Guiochon, M. A., Blamont, J. E. & Brossel. J.	Compt. rend. 243, 1859-1862 (1956).	misc.
Barrat, J. P.	Compt. rend. 244, 2785-2788 (1957) (transl.).	misc.
Boutron, F., Barrat, J. P. & Brossel, J.	Compt. rend. 245, 2250-2253 (957).	misc.
Guiochon, M. A., Blamont, J. E. & Brossel, J.	J. phys. radium 18, 99-108 (1957).	misc.
Vainshtein, L. A.	Optika i Spektroskopiya 3, 313-321 (1957) (transl.).	quant.
Descoubes, J. P. & Pebay-Peyroula, J. C.	Compt. rend. 247, 2330-2332 (1958) (transl.).	misc.
Strijland, J. C. & Nanassy, A. J.	Physica 24, 935-936 (1958).	comm.
Addink, N. W. H.	Spectrochim. Acta 15, 349-359 (1959).	emiss.
Barrat, J. P.	Thesis Paris (1959).	misc.
Barrat, J. P.	J. phys. radium 20, 657-668 (1959).	misc.
Cojan, J. . & Thibeau, M.	Compt. rend. 249, 1489-1491 (1959). (transl.).	misc.
Pebay-Peyroula, J. C.	J. phys. radium 20, 721-729 (1959).	misc.
Pebay-Peyroula, J. C.	Thesis Paris (1959).	misc.
Leś, Z. & Niewodniczański, H.	Acta Phys. Polon. 20, 701-714 (1961).	emiss., rel.
Garstang, R. H.	J. Opt. Soc. Am. 52, 845-851 (1962).	quant.
Koedam, M. & Kruithof, A. A.	Physica 28, 80-100 (1962).	absorpt.
Vainshtein, L. A.	Transactions of the P.N. Lebedev Physics Institute 15, part 1, 1-50 (1962) (CBE-TR).	quant.
Vainshtein, L. A. & Poluektov, I. A.	Optics and Spectroscopy (U.S.S.R.) 12, 254-257 (1962).	quant., rel.
Agarbiceanu, I., Kukurezianu, I., Popesku, I. & Vasiliu, V.	Optics and Spectroscopy (U.S.S.R.) 14, 8-10 (1963).	misc.
Agarbiceanu, I. I., Popesku, I. M., Kukurezianu, I. & Vasiliu, V.	Comp. rend. 257, 2264-2267 (1963).	misc.
Helliwell, T. M.	Thesis California Institute of Technology (1963).	quant.
Agarbiceanu, I. I., Popesku, I. M., Kukurezianu, I. & Vasiliu, V.	Optics and Spectroscopy (U.S.S.R.) 17, 258-261 (1964).	misc.

AUTHOR	JOURNAL	CLASSIFICATION
Barrat, J. P., Chiron, B. & Cojan, J. L.	Comp. rend. 259, 3475-3478 (1964).	misc.
Goullet, G. & Pebay-Peyroula, J. C.	Comp. rend. 259, 93-96 (1964).	misc.
Helliwell, T. M.	Phys. Rev. 135, A325-A331 (1964).	quant.
Barrat, J. P., Cojan, J. L. & Lecluse, Y.	Comp. rend. 260, 1893-1896 (1965).	misc.
Bigeon, M. C. & Cojan, J. L.	Comp. rend. 261, 913-915 (1965).	misc.
Lurio, A.	Phys. Rev. 140, 1505A-1508A (1965).	misc.
Oakberg, T. C.	Thesis Univ. of Cincinnati Microfilm #64-11, 975 (1965).	emiss.
Stewart, J. C. & Rotenberg, M.	Phys. Rev. 140, 1508A-1519A (1965).	quant.

Hg III

AUTHOR	JOURNAL	CLASSIFICATION
Maxwell, L. R.	Phys. Rev. 34, 199-206 (1929).	life

Hg IV

AUTHOR	JOURNAL	CLASSIFICATION
Maxwell, L. R.	Phys. Rev. 34, 199-206 (1929).	life

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I (Iodine)*

I I

AUTHOR	JOURNAL	CLASSIFICATION
Tolman, R. C.	Phys. Rev. 23, 693-709 (1924).	comm.

I II

AUTHOR	JOURNAL	CLASSIFICATION
Martin, W. C. & Corliss, C. H.	J. Research Nat. Bur. Standards 64A, 443-479 (1960).	quant. forb.

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In (Indium)*

In I

AUTHOR	JOURNAL	CLASSIFICATION
Kunisz, M. D.	Acta Phys. Polon. 17, 455-461 (1958).	emiss., rel.

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*See also Table 1.

Author	Journal	Classification
Ostrovskii, Yu. I. & Penkin, N. P.	Optika i Spektroskopiya 4, 719-724 (1958) (O.T.P.1).	hook
Ostrovskii, Yu. I., Penkin, N. P. & Shabanova, L. N.	Bull. Acad. Sci. U.S.S.R. Phys. Ser. 22, 720-724 (1958).	hook
Ostrovskii, Yu. I., Penkin, N. P. & Shabanova, L. N.	Soviet Phys.-Doklady 3, 538-540 (1958).	hook
Vainshtein, L. A.	Bull. Acad. Sci. U.S.S.R. Phys. Ser. 22, 668-669 (1958).	SCF
Ch'en, S. Y. & Smith, A.	Physica 25, 1289-1293 (1959).	absorpt.
Hanus, W.	Bull. acad. polon. sci. Classe 3, 8, 629-636 (1961).	quant.
Penkin, N. P. & Shabanova, L. N.	Optics and Spectroscopy (U.S.S.R.) 14, 5-8 (1963).	hook
Penkin, N. P. & Shabanova, L. N.	Optics and Spectroscopy (U.S.S.R.) 14, 87-88 (1963).	hook
Hulpke, E., Paul, E. & Paul, W.	Z. Physik 177, 257-268 (1964).	life
Lawrence, G. M., Link, J. K. & King, R. B.	Astrophys. J. 141, 293-307 (1965).	absorpt.
Penkin, N. P. & Shabanova, L. N.	Optics and Spectroscopy (U.S.S.R.) 18, 535-537 (1965).	comm.

In II

Author	Journal	Classification
Helliwell, T. M.	Thesis California Institute of Technology (1963).	quant.
Helliwell, T. M.	Phys. Rev. 135, A325-A331 (1964).	quant.

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K (Potassium)*

K I

Author	Journal	Classification
Rupp, E.	Ann. Physik 80, 524-532 (1926).	canal
Ditchburn, R. W.	Proc. Roy. Soc. London A 117, 486-508 (1927).	absorpt.
Prokof'ev, V. K. & Gamow, G.	Z. Physik 44, 887-892 (1927).	hook, rel.
Bleeker, C. E.	Thesis Utrecht (1928).	emiss., rel. & hook, rel.
Lawrence, E. O. & Edlefsen, N. E.	Phys. Rev. 34, 1056-1060 (1929).	absorpt.
Prokof'ev, V. K.	Z. Physik 57, 387-393 (1929).	hook forb., rel.
Weiler, J.	Ann. Physik 1, 361-399 (1929).	misc., rel.
Stevenson, A. F.	Proc. Roy. Soc. London A 128, 591-599 (1930).	quant. forb.

*See also Table 1.

AUTHOR	JOURNAL	CLASSIFICATION
Prokof'ev, V. K.	Zhur. Eksptl. i Teoret. Fiz. 1, 123-127 (1931) (O.T.P. 1).	hook forb., rel.
Filippov, A. N.	Zhur. Eksptl. i Teoret. Fiz. 2, 24-41 (1932) (O.T.P. 1).	hook, rel.
Rubinowicz, A. & Blaton, J.	Ergeb. exakt. Naturw. 11, 176-217 (1932).	comm.
Filippov, A. N.	Physik. Z. Sowjetunion 5, 1-5 (1933).	hook, rel.
Filippov, A. N.	Zhur. Eksptl. i Teoret. Fiz. 3, 520-523 (1933) (O.T.P. 1).	hook, rel.
Ornstein, L. S. & Key, J.	Physica 1, 945-952 (1934).	emiss., rel.
Prokof'ev, V. K.	Zhur. Eksptl. i Teoret. Fiz. 4, 347-358 (1934) (O.T.P. 1).	hook, rel.
van der Held, E. F. M. & Heierman, J. H.	Physica 2, 71-74 (1935).	emiss., rel.
Coenen, P. A. & Kramers, H. A.	Physica 3, 341-345 (1936).	quant.
Sinclair, D. & Webb, H. W.	Phys. Rev. 50, 440-445 (1936).	life
van der Held, E. F. M. & Heierman, J. H.	Physica 3, 31-41 (1936).	emiss.
Heierman, J. H.	Thesis Utrecht (1937).	emiss.
Key, J.	Thesis Utrecht (1937).	emiss., rel.
Schwarz, K. H.	Physica 7, 361-368 (1940).	emiss.
Rozhdestvenskii, D. S. & Penkin, N. P.	Izvest. Akad. Nauk S.S.S.R. Ser. Fiz. 5, 97-101 (1941) (O.T.P. 1).	hook, rel.
Rozhdestvenskii, D. S. & Penkin, N. P.	J. Phys. (U.S.S.R.) 5, 319-337 (1941).	hook, rel. & comm.
Biermann, L.	Physik. Z. 44, 232-233 (1943).	SCF
Biermann, L.	Z. Astrophys. 22, 157-164 (1943).	SCF
Biermann, L.	Nachr. Akad. Wiss. Göttingen, Math-Physik. Kl. 116-118 (1946-1948).	SCF
Biermann, L. & Lübeck, K.	Z. Astrophys. 25, 325-339 (1948).	SCF
Mishra, B.	Phys. Rev. 77, 153 (1950).	SCF
Stephenson, G.	Nature 167, 112 (1951).	misc.
Stephenson, G.	Proc. Phys. Soc. London A 64, 458-464 (1951).	misc.
Villars, D. S.	J. Opt. Soc. Am. 42, 552-558 (1952).	SCF
Vainshtein, L. A. Yavorskii, B. M.	Zhur. Eksptl. i Teoret. Fiz. 27, 712-718 (1954) (SLA transl. RT-3363).	SCF
Yanoukh, F.	Vestnik Leningrad Univ. Ser. Fiz. i Khim. 10, 135-142 (1955) (O.T.P. 2).	quant., rel.
Bersuker, I. B.	Soviet Phys. - Doklady 2, 167-169 (1957).	SCF & estim.
Hinnov, E. & Kohn, H.	J. Opt. Soc. Am. 47, 156-162 (1957).	emiss.
Ritter, G. J. & Series, G. W.	Proc. Roy. Soc. London A 238, 473-488 (1956-1957).	misc.
Varsavsky, C. M.	Thesis Harvard (1958).	quant.
Addink, N. W. H.	Spectrochim. Acta 15, 349-359 (1959).	emiss.

AUTHOR	JOURNAL	CLASSIFICATION
Heavens, O. S.	J. Opt. Soc. Am. 51, 1058-1061 (1961).	CA
Houziaux, L. & Sadoine, M. P.	Bull. soc. roy. sci. Liege 30, 287-299 (1961).	CA
Naqvi, A. M.	Geophysics Corporation of America Technical Report 61-21-A; ASTIA Document 263 459 (1961).	CA
Ostrovskii, Yu. I. & Penkin, N. P.	Optics and Spectroscopy (U.S.S.R.) 12, 379 (1962).	hook
Vainshtein, L. A.	Transactions of the P.N. Lebedev Physics Institute 15, part 1, 1-50 (1962) (CBE-TR).	quant.
Feldman, P. & Novick, R.	Phys. Rev. 11, 278-281 (1963).	life
Kunin, P., Taksar, I., Shiltere, M. & Shilter, E.	Izvestiia Akademii Nauk Lativskoi S.S.R. #8 57-62 (1963).	quant.
Naqvi, A. M.	Conference on Opacity, Albuquerque, N.M., April 8 & 9, Geophysics Corporation of America, Bedford, Massachusetts.	quant.
Anderson, E. M. & Zilitis, V. A.	Optics and Spectroscopy (U.S.S.R.) 16, 99-101 (1964).	quant.
Naqvi, A. M.	J. Quant. Spectrosc. Radiat. Transfer 4, 597-615 (1964).	quant.
Hertzberg, M. & Holland, R.	J. Quant. Spectrosc. Radiat. Transfer 5, 313-320 (1965).	emiss., rel.
Stewart, J. C. & Rotenberg, M.	Phys. Rev. 140, 1508A-1519A (1965).	quant.

K III

Bagus, P. S.	U. S. Atomic Energy Commission ANL-6959 (1964).	SCF

K IV

Osterbrock, D. E.	Astrophys. J. 114, 469-472 (1951).	quant. forb.

K VI

Osterbrock, D. E.	Astrophys. J. 114, 469-472 (1951).	quant. forb.

K VII

Nikitin, A. A. & Yakubovskii, O. A.	Soviet Phys.-Doklady 9, 409-411 (1964).	quant. forb.

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Kr (Krypton)*

Kr I

AUTHOR	JOURNAL	CLASSIFICATION
Petersen, R.	Phys. & Chem. Solids 1, 284 (1957).	quant., rel.
Garton, W. R. S., Pery, A. & Codling, K.	"Proceedings Fourth International Conference on Ionization Phenomena in Gases" 206-209 (ed. Nilsson, N. R., North-Holland Publishing Co., Amsterdam, 1960).	absorpt.
Pery-Thorne, A. & Garton, W. R. S.	Proc. Phys. Soc. London A 76, 833-843 (1960).	absorpt.
Cooper, J. W.	Phys. Rev. 128, 681-693 (1962).	quant.
Huffman, R. E., Tanaka, Y. & Larrabee, J. C.	Applied Optics 2, 947-953 (1963).	absorpt.
Pery-Thorne, A. & Chamberlain, J. E.	Proc. Phys. Soc. London A 82, 133-141 (1963).	hook.
Statz, H., Tang, C. L. & Koster, G. F.	J. Appl. Phys. 34, 2625-2632 (1963).	quant., rel.
Faust, W. L. & McFarlane, R. A.	J. Appl. Phys. 35, 2010-2015 (1964).	quant., rel.
Friedrichs, H.	J. Astrophys. 60, 176-183 (1964).	emiss.
Malakhov, V. P.	Izvestiia Uysshikh Uchebnykh Zavedenii Fizika 8, 180 (1965).	incompl.
Wilkinson, P. G.	J. Quant. Spectrosc. Radiat. Transfer 5, 503-510 (1965).	absorpt.

Kr III

AUTHOR	JOURNAL	CLASSIFICATION
Osterbrock, D. E.	Astrophys. J. 114, 469-472 (1951).	quant. forb.

* * * * *

La (Lanthanum)*

La II

AUTHOR	JOURNAL	CLASSIFICATION
Boyarchuk, M. E. & Boyarchuk, A. A.	Akademiia Nauk S.S.S.R. Krymskaia astrofizecheskaia observatoriia. Izvestiia 22, 234-256 (1960) (O.T.P. 1).	comm.

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*See also Table 1.

Li (Lithium)*

Li I

AUTHOR	JOURNAL	CLASSIFICATION
Kerschbaum, H.	Sitzber. math.-physik. Kl. bayer. Akad. Wiss. München, 19-25 (1926).	canal
Kerschbaum, H.	Ann. Physik 79, 465-488 (1926).	canal
Trumpy, B.	Z. Physik 44, 575-584 (1927).	absorpt., rel.
Trumpy, B.	Z. Physik 50, 228-233 (1928).	quant.
Hargreaves, J.	Proc. Cambridge Phil. Soc. 25, 75-96 (1929).	SCF, rel.
Trumpy, B.	Z. Physik 57, 787-796 (1929).	absorpt., rel. & comm.
Stevenson, A. F.	Proc. Roy. Soc. London A 128, 591-599 (1930).	quant. forb.
Trumpy, B.	Z. Physik 61, 54-60 (1930).	SCF
Trumpy, B.	Z. Physik 66, 720 (1930).	comm.
Filippov, A. N.	Z. Physik 69, 526-547 (1931).	hook, rel.
Filippov, A. N.	Zhur. Eksptl. i Teoret. Fiz. 2, 24-41 (1932) (O.T.P. 1).	hook, rel.
Filippov, A. N.	Trudy Gosudarst. Opt. Inst. Leningrad 8, #85 1-118 (1932) (O.T.P. 2).	hook, rel. comm.
Fock, V. & Petrashen, M.	Physik. Z. Sowjetunion 8, 547-561 (1935).	SCF
Key, J.	Thesis Utrecht (1937).	emiss., rel.
Bates, D. R. & Damgaard, A.	Phil. Trans. Roy. Soc. London. Ser. A. 242, 101-122 (1949).	SCF
Veselov, M. G.	Zhur. Eksptl. i Teoret. Fiz. 19, 959-964 (1949) (ATS transl.).	quant.
Stephenson, G.	Nature 167, 156 (1951).	absorpt.
Vainshtein, L. A. & Yavorskii, B. M.	Doklady Akad. Nauk S.S.S.R. 87, 919-922 (1952) (O.T.P. 1).	quant.
Vainshtein, L. A. & Yavorskii, B. M.	Zhur. Eksptl. i Teoret. Fiz. 27, 712-718 (1954) (SLA transl. RT-3363).	SCF & quant.
Hinnov, E. & Kohn, H.	J. Opt. Soc. Am. 47, 156-162 (1957).	emiss.
Dronov, A. P., Sviridov, A. G. & Sobolev, N. N.	Optika i Spektroskopiya 5, 490-499 (1958) (transl. Johns Hopkins APL Library Bulletin TG230-T159).	emiss., rel.
Varsavsky, C. M.	Thesis Harvard (1958).	quant.
Heavens, O. S.	J. Opt. Soc. Am. 51, 1058-1061 (1961).	CA
Naqvi, A. M.	Geophysics Corporation of America Technical Report 61-21-A; ASTIA Document 263 459 (1961).	CA
Kantseriavichius, A.	Litovskii Fizicheskii Sbornik 2, 245-257 (1962).	quant.
Vasin, B. L., Leskov, L. V. & Savin, F. A.	Fiz. Probl. Spektroskopii, Akad. Nauk S.S.S.R., Materialy 13-Go (Trinadtsatago) Soveshch., Leningrad 39-41 (1962).	life
Anderson, E. M. & Zilitis, V. A.	Optics and Spectroscopy (U.S.S.R.) 16, 211-214 (1963).	quant.

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*See also Table 1.

AUTHOR	JOURNAL	CLASSIFICATION
Cohen, M. & Dalgarno, A.	Proc. Roy. Soc. London A 275, 492-503 (1963).	quant.
Feldman, P. & Novick, R.	Phys. Rev. 11, 278-281 (1963).	life
Flannery, M. R. & Stewart, A. L.	Monthly Notices Roy. Astron. Soc. 126, 387-392 (1963).	quant.
Kunin, P., Taksar, I., Shiltere, M. & Shilter, E.	Izvestiia Akademii Nauk Lativskoi S.S.R. #8 57-62 (1963).	quant.
Naqvi, A. M.	Conference on Opacity, Albuquerque, N.M., April 8 & 9, Geophysics Corporation of America, Bedford, Massachusetts.	quant.
Vetchinkin, S. I.	Optics and Spectroscopy (U.S.S.R.) 14, 169-171 (1963).	quant.
Weiss, A. W.	Astrophys. J. 138, 1262-1276 (1963).	SCF
Ivanova, A. V. & Ivanova, A. N.	Optics and Spectroscopy (U.S.S.R.) 16, 499-502 (1964).	SCF
Naqvi, A. M.	J. Quant. Spectrosc. Radiat. Transfer 4, 597-615 (1964).	quant.
Stewart, J. C. & Rotenberg, M.	Phys. Rev. 140, 1508A-1519A (1965).	quant.

Li II

Veselov, M. G.	Zhur. Eksptl. i Teoret. Fiz. 19, 959-964 (1949) (ATS transl.).	quant.
Veselov, M. G.	Vestnik Leningrad Univ. Ser. Fiz. i Khim. No. 8, 181-185 (1953) (O.T.P. 1).	quant.
Yutsis, A. P., Ushpalis, K. K., Kavetskis, V. I. & Levinson, I. B.	Optika i Spektroskopiya 1, 601-605 (1956) (O.T.P. 1).	quant.
Ushpalis, K. K., Kuzmitskite, L. L. & Budrite, S. D.	Trudy Akademii Nauk Litovskoi S.S.R. Seriia B 3 (15) 47-53 (1958).	quant.
Yutsis, A. P., Vizbaraite, Ia. I. & Eringis, K. K.	Trudy Akademii Nauk Litovskoi S.S.R. Seriia B 3 (26) 99-105 (1961) (O.T.P. 2).	quant.
Kantseriavichius, A.	Litovskii Fizicheskii Sbornik 2, 245-257 (1962).	quant.
Helliwell, T. M.	Thesis California Institute of Technology (1963).	quant.
Helliwell, T. M.	Phys. Rev. 135, A325-A331 (1964).	quant.

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Mg (Magnesium)*

Mg I

Prokof'ev, V. K.	Z. Physik 50, 701-715 (1928).	estim.

*See also Table 1.

AUTHOR	JOURNAL	CLASSIFICATION
Prokof'ev, V. K.	Zhur. Eksptl. i Teoret. Fiz. 1, 111-122 (1931) (O.T.P. 1).	estim.
Russell, H. N.	Astrophys. J. 78, 239-297 (1933).	estim.
Rubinstein, P. J.	Phys. Rev. Letters 58, 1007 (1940).	quant., rel.
Kersten, J. A. H.	Thesis Utrecht (1941).	emiss., rel.
Kersten, J. A. H. & Ornstein, L. S.	Physica 8, 1124-1136 (1941).	emiss., rel.
Schuttevaer, J. W., de Bont, M. J. & van den Broek, Th. H.	Physica 10, 544-552 (1943).	emiss., rel.
Wilson, O. C.	Astrophys. J. 107, 126-150 (1948).	misc., rel.
Biermann, L. & Trefftz, E.	Z. Astrophys. 26, 213-239 (1949).	SCF
Trefftz, E.	Z. Astrophys. 26, 240-263 (1949).	SCF
Trefftz, E.	Z. Astrophys. 28, 67-78 (1950).	SCF
Aller, L. H., Hazen, M., Doherty, L., Grant, G., Jugaku, J., Spiegel, E. & Waddell, J.	Publications of the Observatory, Univ. of Michigan (Feb. 19, 1954).	misc., rel.
Allen, C. W.	Monthly Notices Roy. Astron. Soc. 117, 622-628 (1957).	emiss. & CA
Vainshtein, L. A.	Optika i Spektroskopiya 3, 313-321 (1957) (transl.).	quant.
Bolot, G.	Z. Physik 150, 205-214 (1958).	absorpt.
Ostrovskii, Yu. I., Penkin, N. P. & Shabanova, L. N.	Bull. Acad. Sci. U.S.S.R. Phys. Ser. 22, 720-724 (1958).	hook
Ostrovskii, Yu. I., Penkin, N. P. & Shabanova, L. N.	Soviet Phys.-Doklady 3, 538-540 (1958).	hook
Varsavsky, C. M.	Thesis Harvard (1958).	quant.
Addink, N. W. H.	Spectrochim. Acta 15, 349-359 (1959).	emiss.
Boyarchuk, M. E. & Boyarchuk, A. A.	Akademiia Nauk S.S.S.R. Krymskaia astrofizecheskaia observatoriia. Izvestiia 22, 234-256 (1960) (O.T.P. 1).	comm.
Goldberg, L., Müller, E. A. & Aller, L. H.	Astrophys. J. Suppl. Ser. 5, #45, 1-137 (1960).	CA
Brehm, B., Demtröder, W. & Osberghaus, O.	Z. Naturforsch. 16a, 843 (1961).	life
Demtröder, W.	Thesis Bonn (1961).	life
Demtröder, W.	Z. Physik 166, 42-55 (1962).	life
Garstang, R. H.	J. Opt. Soc. Am. 52, 845-851 (1962).	quant.
Penkin, N. P. & Shabanova, L. N.	Optics and Spectroscopy (U.S.S.R.) 12, 1-5 (1962).	hook, rel.
Vainshtein, L. A.	Transactions of the P.N. Lebedev Physics Institute 15, part 1, 1-50 (1962) (CBE-TR).	quant.
Vainshtein, L. A. & Poluektov, I. A.	Optics and Spectroscopy (U.S.S.R.) 12, 254-257 (1962).	quant., rel.

AUTHOR	JOURNAL	CLASSIFICATION
Helliwell, T. M.	Thesis California Institute of Technology (1963).	quant.
Aarts, J. & Bosch, G.	Physica 30, 1673-1681 (1964).	emiss.
Helliwell, T. M.	Phys. Rev. 135, A325-A331 (1964).	quant.
Lurio, A.	Phys. Rev. 136, A376-A379 (1964).	misc.
Penkin, N. P. & Shabanova, L. N.	Optics and Spectroscopy (U.S.S.R.) 18, 535-537 (1965).	comm.

Mg II

Russell, H. N.	Astrophys. J. 78, 239-297 (1933).	estim.
Biermann, L.	Physik. Z. 44, 232-233 (1943).	SCF
Biermann, L.	Z. Astrophys. 22, 157-164 (1943).	SCF
Biermann, L.	Nachr. Akad. Wiss. Göttingen, Math-Physik. Kl. 116-118 (1946-1948).	SCF
Biermann, L. & Lübeck, K.	Z. Astrophys. 25, 325-339 (1948).	SCF
Aller, L. H., Hazen, M., Doherty, L., Grant, G., Jugaku, J., Spiegel, E. & Waddell, J.	Publications of the Observatory, Univ. of Michigan (Feb. 19, 1954).	misc., rel.
Nagibina, I. M.	Bull. Acad. Sci. U.S.S.R. Phys. Ser. 22, 678-679 (1958).	emiss., rel.
Varsavsky, C. M.	Thesis Harvard (1958).	quant.
Boyarchuk, M. E. & Boyarchuk, A. A.	Akademiia Nauk S.S.S.R. Krymskaia astrofizecheskaia observatoriia. Izvestiia 22, 234-256 (1960) (O.T.P. 1).	comm.
Roberts, T. G. & Hales, W. L.	U. S. Army Missile Command Redstone Arsenal, Alabama, Report No. RR-TR-62-8 (1962).	CA
Bialas-Zabawa, A., Skulska, E. & Walach, Z.	Acta Phys. Polon. 26, 175-183 (1964).	quant., rel.
De Groot, M. & Underhill, A. B.	Bulletin Astronomical Institites Netherlands 17, 280-292 (1964).	misc.
Stewart, J. C. & Rotenberg, M.	Phys. Rev. 140, 1508A-1519A (1965).	quant.

Mg V

Bolotin, A. B., Shironas, I. I. & Braiman, M. Yu.	Vilniaus Valstybinio v. Kapsuko vardo universiteto Mokslo Darbai 33, matematika fizika 9, 107-112 (1960).	quant.
Osterbrock, D. E.	Astrophys. J. 142, 1423-1430 (1965).	quant. forb.

Mg VIII

Nikitin, A. A. & Yakubovskii, O. A.	Soviet Phys.-Doklady 9, 409-411 (1964).	quant. forb.

Mn (Manganese)*

Mn I

AUTHOR	JOURNAL	CLASSIFICATION
Frerichs, R.	Ann. Physik 81, 807-845 (1926).	emiss., rel.
Seward, R. S.	Phys. Rev. 37, 344-361 (1931).	emiss., rel.
Huldt, L. & Lagerqvist, A.	Arkiv Fysik 5, 91-95 (1951).	emiss.
Huldt, L. & Lagerqvist, A.	J. Opt. Soc. Am. 42, 142 (1952).	emiss.
Bell, G. D.	Thesis California Institute of Technology (1956-1957).	absorpt.
Nikonova, E. I. & Prokof'ev, V. K.	Optika i Spektroskopiya 1, 290-297 (1956) (transl.).	hook, rel.
Ostrovskii, Yu. I., Parchevskii, G. F. & Penkin, N. P.	Optika i Spektroskopiya 1, 821-832 (1956) (OTS transl. 62 15508) (AD 266 653).	hook rel.
Allen, C. W. & Asaad, A. S.	Monthly Notices Roy. Astron. Soc. 117, 36-49 (1957).	emiss.
Bell, G. D.	Astron. J. 62, 7 (1957).	comm.
Hinnov, E. & Kohn, H.	J. Opt. Soc. Am. 47, 156-162 (1957).	emiss.
Ostrovskii, Yu. I. & Penkin, N. P.	Optika i Spektroskopiya 3, 193-201 (1957) (O.T.P.1) (AD 266 652).	hook
Dvornikova, I. U. & Nagibina, I. M.	Optika i Spektroskopiya 4, 421-429 (1958) (O.T.P.2).	emiss., rel.
Nagibina, I. M.	Optika i Spektroskopiya 4, 430-437 (1958) (O.T.P.2).	emiss., rel.
Addink, N. W. H.	Spectrochim. Acta 15, 349-359 (1959).	emiss.
Bell, G. D., Davis, M. H., King, R. B. & Routly, P. M.	Astrophys. J. 129, 437-440 (1959).	absorpt.
Allen, C. W.	Monthly Notices Roy. Astron. Soc. 121, 299-332 (1960).	comm. & CA
Boyarchuk, M. E. & Boyarchuk, A. A.	Akademiia Nauk S.S.S.R. Krymskaia astrofizecheskaia observatoriia. Izvestiia 22, 234-256 (1960) (O.T.P. 1).	comm.
Korolev, F. A. & Kvaratskheli, Yu. K.	Optics and Spectroscopy (U.S.S.R.) 10, 200-202 (1961).	emiss., rel.
Korolev, F. A. & Kvaratskheli, Iu. K.	Fiz. Probl. Spektroskopii, Akad. Nauk S.S.S.R. Materialy 13-Go (Trinadtsatago) Soveshch. Leningrad 109-111 (1962).	emiss., rel.
Hefferlin, R. & Gearhart, J.	J. Quant. Spectrosc. Radiat. Transfer 4, 9-28 (1964).	emiss.
Morozova, N. P. & Startsev, G. P.	Optics and Spectroscopy (U.S.S.R.) 17, 174-176 (1964).	emiss.

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*See also Table 1.

AUTHOR	JOURNAL	CLASSIFICATION
Stewart, J. C. & Rotenberg, M.	Phys. Rev. 140, 1508A-1519A (1965).	quant.

Mn II

Seward, R. S.	Phys. Rev. 37, 344-361 (1931).	emiss., rel.
Wilson, O. C.	Astrophys. J. 107, 126-150 (1948).	misc., rel.
Nagibina, I. M.	Bull. Acad. Sci. U.S.S.R. Phys. Ser. 22, 678-679 (1958).	emiss., rel.
Boyarchuk, M. E. & Boyarchuk, A. A.	Akademiia Nauk S.S.S.R. Krymskaia astrofizecheskaia observatoriia. Izvestiia 22, 234-256 (1960) (O.T.P. 1).	comm.
Aller, L. H.	Univ. of Michigan, Dept. of Astronomy Technical Note #3 (1962).	misc., rel.

Mn III

Zhvironaite, S. A., Konstantinavichius, K. V., & Rakauskas, R. I.	Litovskii Fizicheskii Sbornik 2, 17-31 (1962).	SCF

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Mo (Molybdenum)*

Mo I

Nikonova, E. I. & Prokof'ev, V. K.	Optika i Spektroskopiya 1, 290-297 (1956) (transl.).	hook, rel.
Dickerman, P. J. & Deuel, R. W.	J. Quant. Spectrosc. Radiat. Transfer 4, 807-817 (1964).	emiss., rel.

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N (Nitrogen)*

N I

Petrie, W.	J. Geophys. Research 55, 143-151 (1950).	quant.
Ufford, C. W. & Gilmour, R. M.	Astrophys. J. 111, 580-581 (1950).	quant. forb., rel.
Garstang, R. H.	Astrophys. J. 115, 506-508 (1952).	quant. forb.

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*See also Table 1.

AUTHOR	JOURNAL	CLASSIFICATION
Motschmann, H.	Z. Physik 143, 77-92 (1955).	emiss.
Garstang, R. H.	"The Airglow & the Aurorae", 324-327 (ed. Armstrong & Dalgarno, Pergamon Press, New York, 1956).	quant. forb.
Levinson, I. B., Bolotin, A. B. & Levin, L. I.	Trudy Vil'nyusskogo un. 5, 49-55 (1956) (transl.).	quant.
Varsavsky, C. M.	Thesis Harvard (1958).	quant.
Yutsis, A. P. & Vizbaraite, Ia. I.	Trudy Akademii Nauk Litovskoi S.S.R., Seriia B, 1 (17) 3-15 (1959).	quant. forb.
Bates, D. R.	"Physics of the Upper Atmosphere", 300-302 (ed. Ratcliffe, J. A., Academic Press, New York, 1960).	comm. forb.
Goldberg, L., Müller, E. A. & Aller, L. H.	Astrophys. J. Suppl. Ser. 5, #45, 1-137 (1960).	CA
Chiplis, I. V., Vizbaraite, Ia. I. & Yutsis, A. P.	Trudy Akademii Nauk Litovskoi S.S.R., Serriia B 2 (25) 11-22 (1961).	quant.
Doherty, L. R.	Thesis Michigan (1961).	emiss.
Naqvi, A. M.	Geophysics Corporation of America Technical Report 61-21-A; ASTIA Document 263 459 (1961).	comm. forb.
Richter, J.	Z. Astrophys. 51, 177-186 (1961).	emiss.
Bates, D. R.	Planetary and Space Science 9, 77-79 (1962).	CA
Fairchild, C. E., & Clark, K. C.	Phys. Rev. Letters 9, 100-101 (1962).	misc.
Kelly, P. H. & Armstrong, B. H.	Phys. Rev. Letters 9, 426 (1962).	SCF
Fairchild, C. E. & Clark, K. C.	Univ. Washington Technical Report No. 42-62-2 (1963) Thesis Washington University (AD 283 753)	quant & misc.
Norman, G. E.	Optics and Spectroscopy (U.S.S.R.) 14, 315-317 (1963).	quant.
Cohen, M. & Dalgarno, A.	Proc. Roy. Soc. London A 280, 258-270 (1964).	quant.
Kelly, P. S. & Armstrong, B. H.	Phys. Rev. Letters 12, 35-36 (1964).	comm.
Kelly, P. S.	Astrophys. J. 140, 1247-1268 (1964).	SCF
Kelly, P. S.	J. Quant. Spectrosc. Radiat. Transfer 4, 117-148 (1964).	quant.
Rudzikas, Z. B., Vizbaraite, Ia. I. & Yutsis, A. P.	Litovskii Fizicheskii Sbornik 4, 51-58 (1964).	quant.
Shumaker, Jr., J. B.	Proc. VI Intern. Conf. on Ionization Phenomena in Gases 2, 311-313 (1964).	emiss.
Shumaker, Jr., J. B. & Yokley, C. R.	Applied Optics 3, 83-87 (1964).	emiss.
Kelly, P. S., Sokoloff, J. & Armstrong, B. H.	Technical Report No. WL TR-64-172 (1965).	quant.
Labuhn, F.	Z. Naturforsch. 20a, 998 (1965).	emiss.
Labuhn, F.	Thesis Technischen Hochschule Müchen (1965).	emiss.
Morse, T. A. & Kaufman, F.	J. Chem. Phys. 42, 1785-1790 (1965).	absorpt.

AUTHOR	JOURNAL	CLASSIFICATION
Prag, A. B., Fairchild, C. E. & Clark, K. C.	Phys. Rev. 137, A1358-A1363 (1965).	misc.
Stewart, J. C. & Rotenberg, M.	Phys. Rev. 140, 1508A-1519A (1965).	quant.
Lawrence, G. M. & Savage, B. D.	Phys. Rev. to be published (1965).	life

N II

AUTHOR	JOURNAL	CLASSIFICATION
Stevenson, A. F.	Proc. Roy. Soc. London A 137, 298-325 (1932).	quant. forb.
Condon, E. U.	Astrophys. J. 79, 217-234 (1934).	quant. forb.
Garstang, R. H.	Monthly Notices Roy. Astron. Soc. 111, 115-124 (1951).	quant. forb.
Vainshtein, L. A. & Yavorskii, B. M.	Doklady Akad. Nauk S.S.S.R. 87, 919-922 (1952) (O.T.P. 1).	quant.
Yamanouchi, T. & Horie, H.	J. Phys. Soc. Japan 7, 52-56 (1952).	quant. forb.
Mandel'shtam, S. L. & Sukhodrev, N. K.	Zhur. Eksptl. i Teoret. Fiz. 24, 701-707 (1953).	incompl.
Yilmaz, H.	Phys. Rev. 100, 1148-1153 (1955).	quant. forb.
Bolotin, A. B., Levinson, I. B. & Levin, L. I.	Soviet Phys. - JETP 2, 391-395 (1956).	quant.
McCarroll, R. J. & Wakely, P. G.	"The Airglow and the Aurorae", 337-339 (ed. Armstrong & Dalgarno, Pergamon Press, New York, 1956).	SCF
Mastrup, F. & Wiese, W.	Z. Astrophys. 44, 259-279 (1958).	emiss. rel.
Varsavsky, C. M.	Thesis Harvard (1958).	quant.
Aller, L. H. & Jugaku, J.	Astrophys. J. Suppl. Ser. 4, #38, 109-156 (1959).	CA
Yutsis, A. P. & Vizbaraite, Ia. I.	Trudy Akademii Nauk Litovskoi S.S.R., Seriia B, 1 (17) 3-15 (1959).	quant. forb.
Bates, D. R.	"Physics of the Upper Atmosphere", 300-302 (ed. Ratcliffe, J. A., Academic Press, New York, 1960).	comm. forb.
Gaustad, J. E. & Spitzer, Jr., L.	Astrophys. J. 134, 771-776 (1961).	estim.
Jugaku, J., Sargent, L. W. & Greenstein, J. L.	Astrophys. J. 134, 783-796 (1961).	CA
Naqvi, A. M.	Geophysics Corporation of America Technical Report 61-21-A; ASTIA Document 263 459 (1961).	comm. forb.
Cohen, M. & Dalgarno, A.	Proc. Roy. Soc. London A 280, 258-270 (1964).	quant.
Kelly, P. S.	Astrophys. J. 140, 1247-1268 (1964).	SCF
Kelly, P. S.	J. Quant. Spectrosc. Radiat. Transfer 4, 117-148 (1964).	quant.
Kelly, P. S., Sokoloff, J. & Armstrong, B. H.	Technical Report No. WL TR-64-172 (1965).	quant.

AUTHOR	JOURNAL	CLASSIFICATION
Stewart, J. C. & Rotenberg, M.	Phys. Rev. 140, 1508A-1519A (1965).	quant.
Lawrence, G. M. & Savage, B. D.	Phys. Rev. 141, 67-70 (1966).	life
Osterbrock, D. E.	Astrophys. J. 142, 1423-1430 (1965).	quant. forb.

N III

Aller, L. H.	Astrophys. J. 97, 135-165 (1943).	quant.
Vainshtein, L. A. & Yavorskii, B. M.	Doklady Akad. Nauk S.S.S.R. 87, 919-922 (1952) (O.T.P. 1).	quant.
Bolotin, A. B. & Yutsis, A. P.	Zhur. Eksptl. i Teoret. Fiz. 24, 537-543 (1953) (O.T.P. 1).	quant.
Mandel'shtam, S. L. & Sukhodrev, N. K.	Zhur. Eksptl. i Teoret. Fiz. 24, 701-707 (1953).	incompl.
Gaustad, J. E. & Spitzer, Jr., L.	Astrophys. J. 134, 771-776 (1961).	estim.
Nikitin, A. A.	Vestnik Leningrad Univ. Ser. Mat. Mekh. i Astron. Series 3, #13, 113-137 (1962) (O.T.P. 2).	quant.
Nikitin, A. A. & Yakubovskii, O. A.	Soviet Astronomy-AJ 7, 189-198 (1963).	quant.
Cohen, M. & Dalgarno, A.	Proc. Roy. Soc. London A 280, 258-270 (1964).	quant.
Kelly, P. S.	Astrophys. J. 140, 1247-1268 (1964).	SCF
Kelly, P. S.	J. Quant. Spectrosc. Radiat. Transfer 4, 117-148 (1964).	quant.
Nikitin, A. A. & Yakubovskii, O. A.	Soviet Phys.-Doklady 9, 409-411 (1964).	quant. forb.
Kelly, P. S., Sokoloff, J. & Armstrong, B. H.	Technical Report No. WL TR-64-172 (1965).	quant.
Stewart, J. C. & Rotenberg, M.	Phys. Rev. 140, 1508A-1519A (1965).	quant.
Osterbrock, D. E.	Astrophys. J. 142, 1423-1430 (1965).	quant. forb.

N IV

Aller, L. H.	Astrophys. J. 97, 135-165 (1943).	quant.
Bolotin, A. B. & Yutsis, A. P.	Zhur. Eksptl. i Teoret. Fiz. 24, 537-543 (1953) (O.T.P. 1).	quant.
Cohen, M. & Dalgarno, A.	Proc. Roy. Soc. London A 280, 258-270 (1964).	quant.
Kelly, P. S.	Astrophys. J. 140, 1247-1268 (1964).	SCF
Kelly, P. S.	J. Quant. Spectrosc. Radiat. Transfer 4, 117-148 (1964).	quant.
Kelly, P. S., Sokoloff, J. & Armstrong, B. H.	Technical Report No. WL TR-64-172 (1965).	quant.
Pfennig, H., Steele, P. & Trefftz, E.	J. Quant. Spectrosc. Radiat. Transfer 5, 355-347 (1965).	SCF

AUTHOR	JOURNAL	CLASSIFICATION

N V

Kantseriavichius, A.	Litovskii Fizicheskii Sbornik 2, 245-257 (1962).	quant.
Cohen, M. & Dalgarno, A.	Proc. Roy. Soc. London A 275, 492-503 (1963).	quant.
Flannery, M. R. & Stewart, A. L.	Monthly Notices Roy. Astron. Soc. 126, 387-392 (1963).	quant.
Kunin, P., Taksar, I., Shiltere, M. & Shilter, E.	Izvestiia Akademii Nauk Lativskoi S.S.R. #8 57-62 (1963).	quant.
Weiss, A. W.	Astrophys. J. 138, 1262-1276 (1963).	SCF
Cohen, M. & Dalgarno, A.	Proc. Roy. Soc. London A 280, 258-270 (1964).	quant.
Kelly, P. S.	Astrophys. J. 140, 1247-1268 (1964).	SCF
Kelly, P. S.	J. Quant. Spectrosc. Radiat. Transfer 4, 117-148 (1964).	quant.
Berkner, K. H., Cooper III, W. S., Kaplan, S. N. & Pyle, R. V.	Phys. Letters 16, 35-36 (1965).	life
Kelly, P. S., Sokoloff, J. & Armstrong, B. H.	Technical Report No. WL TR-64-172 (1965).	quant.

N VI

Kantseriavichius, A.	Litovskii Fizicheskii Sbornik 2, 245-257 (1962).	quant.

* * * * *

Na (Sodium)*

Na I

Ladenburg, R. & Minkowski, R.	Z. Physik 6, 153-164 (1921).	misc.
Minkowski, R.	Thesis Breslau (1921).	misc.
Minkowski, R.	Ann. Physik 66, 206-226 (1921).	misc.
Thomas, W.	Z. Physik 24, 169-196 (1924).	estim.
Tolman, R. C.	Phys. Rev. 23, 693-709 (1924).	comm.
Bartels, H.	Z. Physik 32, 415-438 (1925).	quant.
Ellett, A.	J. Opt. Soc. Am. 10, 427-437 (1925).	misc.
Gerlach, W. & Schütz, W.	Physik. Z. 26, 33-35 (1925).	comm.
Harrison, G. R.	Phys. Rev. 25, 768-782 (1925).	absorpt., rel.
Hoyt, F. C.	Phys. Rev. 26, 749-760 (1925).	quant., rel.
Trumpy, B.	Z. Physik 34, 715-721 (1925).	absorpt., rel.
Kerschbaum, H.	Ann. Physik 79, 465-488 (1926).	canal

*See also Table 1.

AUTHOR	JOURNAL	CLASSIFICATION
Kerschbaum, H.	Sitzber. math.-physik. kl. bayer. Akad. Wiss. München, 19-25 (1926).	canal
Minkowski, R.	Z. Physik 36, 839-858 (1926).	absorpt.
Sugiura, Y.	Phil. Mag. 4, 495-504 (1927).	quant.
Trumpy, B.	Z. Physik 42, 327-328 (1927).	comm.
Trumpy, B.	Kgl. Norske Videnskab. Selskabs, Skrifter 1, 1-80 (1927).	absorpt.
Bleeker, C. E.	Thesis Utrecht (1928).	emiss., rel.
Ladenburg, R.	Z. Physik 48, 15-25 (1928).	comm.
Ladenburg, R. & Minkowski, R.	Ann. Physik 87, 298-306 (1928).	comm.
Ornstein, L. S. & van der Held, E. F. M.	Ann. Physik 85, 953-960 (1928).	emiss.
Filippov, A. & Prokof'ev., V. K.	Z. Physik 56, 458-476 (1929).	hook, rel.
Hupfeld, H.	Z. Physik 54, 484-497 (1929).	life
Prokof'ev, V. K.	Z. Physik 57, 387-393 (1929).	hook forb., rel.
Prokof'ev, V. K.	Z. Physik 58, 255-267 (1929).	quant.
Weiss, C.	Ann. Physik 1, 565-612 (1929).	emiss., rel.
Ladenburg, R. & Thiele, E.	Z. Physik. Chem. B 7, 161-187 (1930).	comm.
Stevenson, A. F.	Proc. Roy. Soc. London A 128, 591-599 (1930).	quant. forb.
Trumpy, B.	Z. Physik 61, 54-60 (1930).	SCF
Berry, N. E. & Rollefson, G. K.	Phys. Rev. 38, 1599-1611 (1931).	emiss., rel.
Ladenburg, R. & Thiele, E.	Z. Physik 72, 697-699 (1931).	comm.
Prokof'ev, V. K.	Zhur. Eksptl. i Teoret. Fiz. 1, 123-127 (1931) (O.T.P. 1).	hook forb., rel.
Weingeroff, M.	Z. Physik 67, 679-698 (1931).	misc.
Zehden, W.	Naturwissenschaften 19, 826-827 (1931).	absorpt.
Duschinsky, F.	Z. Physik 78, 586-602 (1932).	life
Filippov, A. N.	Zhur. Eksptl. i Teoret. Fiz. 2, 24-41 (1932) (O.T.P. 1).	hook, rel.
Rubinowicz, A. & Blaton, J.	Ergeb. exakt. Naturw. 11, 176-217 (1932).	comm.
van der Held, E. F. M.	Thesis Utrecht (1932) (transl.).	emiss.
van der Held, E. F. M. & Ornstein, L. S.	Z. Physik 77, 459-477 (1932).	emiss.
Ornstein, L. S. & Key, J.	Z. Physik 85, 565-567 (1933).	emiss., rel.
Zehden, W.	Z. Physik 86, 555-582 (1933).	absorpt.
Fock, V.	Z. Physik 89, 744-749 (1934).	comm.
Ornstein, L. S. & Key, J.	Physica 1, 945-952 (1934).	emiss., rel.
Fock, V. & Petrashen, M.	Physik. Z. Sowjetunion 8, 547-561 (1935).	SCF
Minkowski, R. & Weber-Schäfer, M.	Z. Physik 94, 172-175 (1935).	comm.
Minkowski, R., Müller, H. G. & Weber-Schäfer, M.	Z. Physik 94, 145-171 (1935).	emiss.

AUTHOR	JOURNAL	CLASSIFICATION
Righini, G.	Z. Astrophys. 10, 344-352 (1935).	estim.
Key, J.	Thesis Utrecht (1937).	emiss., rel.
Rozhdestvenskii, D. S. & Penkin, N. P.	J. Phys. (U.S.S.R.) 5, 319-337 (1941).	hook, rel. & comm.
Rozhdestvenskii, D. S. & Penkin, N. P.	Izvest. Akad. Nauk S.S.S.R. Ser. Fiz. 5, 97-101 (1941) (O.T.P. 1).	hook, rel.
Biermann, L.	Z. Astrophys. 22, 157-164 (1943).	SCF
Biermann, L.	Physik. Z. 44, 232-233 (1943).	SCF
Paul, W.	Z. Physik 124, 121-128 (1944).	misc.
Kvater, G. S.	Izvest. Akad. Nauk S.S.S.R. Ser. Fiz. 9, 236-237 (1945) (O.T.P. 1).	hook
Biermann, L.	Nachr. Akad. Wiss. Göttingen, Math-Physik. Kl. 116-118 (1946-1948).	SCF
Dupuy, G.	Compt. rend. 222, 654-656 (1946) (transl.).	comm.
Kvater, G. S.	Vestnik Leningrad Univ. Ser. Fiz. i Khim. No. 2, 135-141 (1947) (O.T.P. 1).	hook
Biermann, L. & Lübeck, K.	Z. Astrophys. 25, 325-339 (1948).	SCF
Bates, D. R. & Damgaard, A.	Phil. Trans. Roy. Soc. London. Ser. A. 242, 101-122 (1949).	CA & SCF
Seaton, M. J.	Proc. Roy. Soc. London A 208, 418-430 (1951).	comm.
Stephenson, G.	Nature 167, 112 (1951).	misc.
Stephenson, G.	Proc. Phys. Soc. London A 64, 458-464 (1951).	misc.
Vainshtein, L. A. & Yavorskii, B. M.	Doklady Akad. Nauk S.S.S.R. 87, 919-922 (1952) (O.T.P. 1).	quant.
Petrashen, M. I. & Abarenkov, I. V.	Vestnik Leningrad Univ. Ser. Fiz. i Khim. No. 5, 141-148 (1954) (O.T.P. 2).	quant.
Vainshtein, L. A. & Yavorskii, B. M.	Zhur. Eksptl. i Teoret. Fiz. 27, 712-718 (1954) (SLA transl. RT-3363).	SCF & quant.
Yanoukh, F.	Vestnik Leningrad Univ. Ser. Fiz. i Khim. 10, 135-142 (1955) (O.T.P. 2).	quant. rel.
Anderson, E. M., Bushka, Z. A., Grinberg, R. O. & Saulgozha, A. K.	Vestnik Leningrad Univ. Ser. Fiz. i Khim. No. 4, 27-31 (1956) (O.T.P. 1).	quant.
Bersuker, I. B.	Soviet Phys. - Doklady 2, 167-169 (1957).	SCF & estim.
Hinnov, E. & Kohn, H.	J. Opt. Soc. Am. 47, 156-162 (1957).	emiss.
Vainshtein, L. A.	Optika i Spektroskopiya 3, 313-321 (1957) (transl.).	quant.
Bersuker, I. B.	Bull. Acad. Sci. U.S.S.R. Phys. Ser. 22, 743-746 (1958).	SCF
Descoubes, J. P. & Pebay-Peyroula, J. C.	Compt. rend. 247, 2330-2332 (1958) (transl.).	misc.

AUTHOR	JOURNAL	CLASSIFICATION
Dronov, A. P., Sviridov, A. G. & Sobolev, N. N.	Optika i Spektroskopiya 5, 490-499 (1958) (transl. Johns Hopkins APL Library Bulletin TG230-T159).	emiss., rel.
Krüger, H. & Scheffler, K.	J. phys. radium 19, 854-857 (1958).	misc.
Varsavsky, C. M.	Thesis Harvard (1958).	quant.
Addink, N. W. H.	Spectrochim. Acta 15, 349-359 (1959).	emiss.
Archambault, Y., Descoubes, J., Priou, M., Omont, A. & Pebay-Peyroula, J.	J. phys. radium 21, 677-679 (1959).	misc.
Goldberg, L., Müller, E. A. & Aller, L. H.	Astrophys. J. Suppl. Ser. 5, #45, 1-137 (1960).	CA
Brehm, B., Demtröder, W. & Osberghaus, O.	Z. Naturforsch. 16a, 843 (1961).	life
Demtröder, W.	Thesis Bonn (1961).	life
Heavens, O. S.	J. Opt. Soc. Am. 51, 1058-1061 (1961).	CA
Houziaux, L. & Sadoine, M. P.	Bull. soc. roy. sci. Liege 30, 287-299 (1961).	CA
Naqvi, A. M.	Geophysics Corporation of America Technical Report 61-21-A; ASTIA Document 263 459 (1961).	CA
Ostrovskii, Yu. I. & Penkin, N. P.	Optics and Spectroscopy (U.S.S.R.) 11, 1-5 (1961).	hook
Demtröder, W.	Z. Physik 166, 42-55 (1962).	life
Nikonova, E. I., Prokof'ev, V. K. & Startsev, G. P.	Fiz. Probl. Spektroskopii, Akad. Nauk S.S.S.R., Materialy 13-Go (Trinadtsatago) Soveshch., Leningrad p. 51-54 (1962).	hook
Ostrovskii, Iu. I. & Penkin, N. P.	Fiz. Probl. Spektroskopii, Akad. Nauk S.S.S.R., Materialy 13-Go (Trinadtsatago) Soveshch. Leningrad p. 54-57 (1962).	hook
Vainshtein, L. A.	Transactions of the P.N. Lebedev Physics Institute 15, part 1, 1-50 (1962) (CBE-TR).	quant.
Vasin, B. L., Leskov, L. V. & Savin, F. A.	Fiz. Probl. Spektroskopii, Akad. Nauk S.S.S.R., Materialy 13-Go (Trinadtsatago) Soveshch., Leningrad 39-41 (1962).	life
Agarbiceanu, I., Kukurezianu, I., Popesku, I. & Vasiliu, V.	Optics and Spectroscopy (U.S.S.R.) 14, 8-10 (1963).	misc.
Kunin, P., Taksar, I., Shiltere, M. & Shilter, E.	Izvestiia Akademii Nauk Lativskoi S.S.R. #8 57-62 (1963).	quant.
Naqvi, A. M.	Conference on Opacity, Albuquerque, N.M., April 8 & 9, Geophysics Corporation of America, Bedford, Massachusetts.	quant.
Anderson, E. M. & Zilitis, V. A.	Optics and Spectroscopy (U.S.S.R.) 16, 99-101 (1964).	quant.
Hulpke, E., Paul, E. & Paul, W.	Z. Physik 177, 257-268 (1964).	life
Markova, G. V. & Chaika, M. P.	Optics and Spectroscopy (U.S.S.R.) 17, 170-173 (1964).	misc.

AUTHOR	JOURNAL	CLASSIFICATION
Naqvi, A. M.	J. Quant. Spectrosc. Radiat. Transfer 4, 597-615 (1964).	quant.
Hertzberg, M. & Holland, R.	J. Quant. Spectrosc. Radiat. Transfer 5, 313-320 (1965).	emiss., rel.
Karstensen, F.	Z. Physik 187, 165-179 (1965).	life
Stewart, J. C. & Rotenberg, M.	Phys. Rev. 140, 1508A-1519A (1965).	quant.

Na II

Petersen, R.	Phys. & Chem. Solids 1, 284 (1957).	quant., rel.

Na IV

Bolotin, A. B., Shironas, I. I. & Braiman, M. Yu.	Vilniaus Valstybinio V. Kapsuko vardo universiteto Mokslo Darbai 33, matematika fizika 2, 107-112 (1960).	quant.

Na VII

Nikitin, A. A. & Yakubovskii, O. A.	Soviet Phys.-Doklady 9, 409-411 (1964).	quant. forb.

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Ne (Neon)*

Ne I

Ladenburg, R., Kopfermann, H. & Carst, A.	Sitzber. deut. Akad. Wiss. Berlin, Kl. Math., Phys. u Tech. No. 21, 255-273 (1926).	hook
Kopfermann, H. & Ladenburg, R.	Z. Physik 48, 51-61 (1928).	hook
Kopfermann, H. & Ladenburg, R.	Z. Physik 65, 167-188 (1930).	hook
Ladenburg, R. & Levy, S.	Z. Physik 65, 189-206 (1930).	hook, rel.
Ladenburg, R.	Rev. Mod. Phys. 5, 243-256 (1933).	hook, hook, rel. & comm.
Schütz, W.	Ann. Physik 18, 705-720 (1933).	misc.
Griffiths, J. H. E.	Proc. Roy. Soc. London A 143, 588-604 (1934).	life
Ladenburg, R.	Uspekhi Fiz. Nauk 14, 721-741 (1934).	hook, hook, rel. & comm.
Ladenburg, R. & Levy, S.	Z. Physik 88, 461-468 (1934).	emiss.

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*See also Table 1.

AUTHOR	JOURNAL	CLASSIFICATION
Shortley, G. H.	Phys. Rev. 47, 295-300 (1935).	quant., rel. & comm.
Krebs, K.	Z. Physik 101, 604-642 (1936).	absorpt., rel.
Garbuny, M.	Z. Physik 107, 362-368 (1937).	emiss., rel.
Ufford, C. W.	Astrophys. J. 85, 249-250 (1937).	quant., rel.
Phelps, A. V.	Phys. Rev. 100, 1230 (1955).	life
Petersen, R.	Phys. & Chem. Solids 1, 284 (1957).	quant., rel.
Varsavsky, C. M.	Thesis Harvard (1958).	quant.
Gold, A. & Knox, R. S.	Phys. Rev. 113, 834-839 (1959).	SCF
Phelps, A. V.	Phys. Rev. 114, 1011-1025 (1959).	comm., rel.
Osherovich, A. L. & Petelin, G. M.	Soviet Phys. - Doklady 4, 1289-1291 (1960).	life
Bennett, Jr., W. R.	"International Conference on Quantum Electronics," 2nd, 28-43 "Advances in Quantum Electronics" (ed. Singer, J. R., Columbia University Press, New York 1961).	life
Doherty, L. R.	Thesis Michigan (1961).	emiss.
Frish, S. Z. & Bochkova, O. P.	Vestnik Leningrad Univ. Ser. Fiz. i Khim. No. 16, 40-58 (1961) (O.T.P. 2).	emiss., rel.
Cooper, J. W.	Phys. Rev. 128, 681-693 (1962).	quant.
Frish, S. Z. & Bochkova, O. P.	Fiz. Probl. Spektroskopii, Akad. Nauk S.S.S.R., Materialy 13-Go (Trinadtsatago) Soveshch., Leningrad p. 142-145 (1962).	incompl.
McLean, E. A.	6th International Conference on Ionization Phenomena in Gases Proceedings, Paris 3, 389-394 (1963).	emiss.
Pery-Thorne, A. & Chamberlain, J. E.	Proc. Phys. Soc. London A 82, 133-141 (1963).	hook.
Statz, H., Tang, C. L. & Koster, G. F.	J. Appl. Phys. 34, 2625-2632 (1963).	quant., rel.
Cordover, R. H., Szöke, A. & Javan, A.	Bull. Am. Phy Soc. Series II Vol. 9, 490 (1964).	life
Faust, W. L. & McFarlane, R. A.	J. Appl. Phys. 35, 2010-2015 (1964).	quant., rel.
Friedrichs, H.	J. Astrophys. 60, 176-183 (1964).	emiss.
Kelly, P. S.	J. Quant. Spectrosc. Radiat. Transfer 4, 117-148 (1964).	quant.
Koopman, D. W.	J. Opt. Soc. Am. 54, 1354-1358 (1964).	comm.
Korolev, F. A., Odintsov, U. I. & Fursova, E. V.	Optics and Spectroscopy (U.S.S.R.) 16, 304-305 (1964).	misc.
Bennett, J., W. R., Kindlmann, P. J. & Mercer, G. N.	Applied Optics Supplement 2 of Chemical Lasers 34-57 (1965).	life

AUTHOR	JOURNAL	CLASSIFICATION
Klose, J. .	Astrophys. J. 141, 814-818 (1965).	life
Stewart, J. C. & Rotenberg, M.	Phys. Rev. 140, 1508A-1519A (1965).	quant.
Klose, J. .	Phys. Rev. 141, 181-186 (1966).	life

Ne II

AUTHOR	JOURNAL	CLASSIFICATION
Garstang, R. H.	Monthly Notices Roy. Atron. Soc. 110, 612-614 (1950).	CA & SCF
Garstang, R. H.	Monthly Notices Roy. Astron. Soc. 114, 118-133 (1954).	quant., rel. & CA
Traving, G.	Z. Astrophys. 36, 1-41 (1955).	CA
Naqvi, A. M.	Conference on Opacity, Albuquerque, N.M., April 8 & 9, Geophysics Corporation of America, Bedford, Massachusetts.	quant.
Aller, L. H., Elste, G. & Jugaku, J.	Astrophys. J. Supp 1 Ser. 3, No. 25, 1-35 (1957).	CA
Bagus, P. S.	U. S. Atomic Energy Commission ANL-6959 (1964).	SCF
Koopman, D. W.	J. Opt. Soc. Am. 54, 1354-1358 (1964).	emiss.
Koopman, D. W.	Thesis University of Michigan (1964).	emiss.
Naqvi, A. M.	J. Quant. Spectrosc. Radiat. Transfe 4, 597-615 (1964).	quant.
Froese, C.	Phys. Rev. 137, A1644-A1648 (1965).	SCF
Osterbrock, D. E.	Astrophys. J. 142, 1423-1430 (1965).	quant. forb.

Ne III

AUTHOR	JOURNAL	CLASSIFICATION
Garstang, R. H.	Monthly Notices Roy. Astron. Soc. 111, 115-124 (1951).	quant. forb.
Yutsis, A. P. & Vizbaraite, Ia. I.	Trudy Akademii Nauk Litovskoi S.S.R., Seriia B, 1 (17) 3-15 (1959).	quant. forb.
Bolotin, A. B., Shironas, I. I. & Braiman, M. Yu.	Vilniaus Valstybinio V. Kapsuko vardo universiteto Mokslo Darbai 33, matematika fizika 9, 107-112 (1960).	quant.
Osterbrock, D. E.	Astrophys. J. 142, 1423-1430 (1965).	quant. forb.

Ne IV

AUTHOR	JOURNAL	CLASSIFICATION
Levinson, I. B., Bolotin, A. B. & Levin, L. I.	Trudy Vil'nyusskogo un. 49-55 (1956) (transl.).	quant.
Garstang, R. H.	Monthly Notices Roy. Astron. Soc. 120, 201-203 (1960).	quant. forb.
Bashkin, S., Heroux, L. & Shaw, J.	Phys. Letters 13, 229-231 (1964).	life

Ne V

AUTHOR	JOURNAL	CLASSIFICATION
Obi, S.	Publ. Astron. Soc. Japan 2, 150-155 (1950).	quant. forb., rel.
Garstang, R. H.	Monthly Notices Roy. Astron. Soc. 111, 115-124 (1951).	quant. forb.
Bolotin, A. B., Levinson, I. B. & Levin, L. I.	Soviet Phys. - JETP 2, 391-395 (1956).	quant.
Osterbrock, D. E.	Astrophys. J. 142, 1423-1430 (1965).	quant. forb.

Ne VI

AUTHOR	JOURNAL	CLASSIFICATION
Bashkin, S., Heroux, L. & Shaw, J.	Phys. Letters 13, 229-231 (1964).	life
Nikitin, A. A. & Yakubovskii, O. A.	Soviet Phys.-Doklady 9, 409-411 (1964).	quant. forb.

Ne VII

AUTHOR	JOURNAL	CLASSIFICATION
Veselov, M. G.	Zhur. Eksptl. i Teoret. Fiz. 19, 959-964 (1949) (ATS transl.).	quant.
Veselov, M. G.	Vestnik Leningrad Univ. Ser. Fiz. i Khim. No. 8, 181-185 (1953) (O.T.P. 1).	quant.

Ne VIII

AUTHOR	JOURNAL	CLASSIFICATION
Veselov, M. G.	Zhur. Eksptl. i Teoret. Fi. 19, 959-964 (1949) (ATS transl.).	quant.
Weiss, A. W.	Astrophys. J. 138, 1262-1276 (1963).	SCF
Berkner, K. H., Cooper III, W. S., Kaplan, S. N. & Pyle, R. V.	Phys. Letters 16, 35-36 (1965).	life

Ne IX

AUTHOR	JOURNAL	CLASSIFICATION
Veselov, M. G.	Zhur. Eksptl. i Teoret. Fiz. 19, 959-964 (1949) (ATS transl.).	quant.
Veselov, M. G.	Vestnik Leningrad Univ. Ser. Fiz. i Khim. No. 8, 181-185 (1953).	quant.

Ni (Nickel)*

Ni I

AUTHOR	JOURNAL	CLASSIFICATION
Bouma, T.	Thesis Utrecht (1930).	emiss., rel.
Ornstein, L. S. & Bouma, T.	Phys. Rev. 36, 679-693 (1930).	emiss., rel.
van Driel, H.	Thesis Utrecht (1935).	emiss., rel.
King, R. B.	Astrophys. J. 108, 87-91 (1948).	absorpt., rel.
Wilson, O. C.	Astrophys. J. 107, 126-150 (1948).	misc., rel.
Estabrook, F. B.	Thesis California Institute of Technology (1950).	absorpt.
Estabrook, F. B.	Astrophys. J. 113, 684-689 (1951).	absorpt.
Parchevskii, G. F. & Penkin, N. P.	Vestnik Leningrad Univ. Ser. Fiz. i Khim. 9, #11, 113-118 (1954) (transl. by J. Tech., Harvard College Observatory, June 1964).	hook, rel.
Parchevski, G. F. & Penkin, N. P.	Bull. Acad. Sci. U.S.S.R. Phys. Ser. 19, 4-5 (1955).	comm.
Allen, C. W. & Asaad, A. S.	Monthly Notices Roy. Astron. Soc. 117, 36-49 (1957).	emiss.
Hinnov, E. & Kohn, H.	J. Opt. Soc. Am. 47, 156-162 (1957).	emiss.
Varsavsky, C. M.	Thesis Harvard (1958).	quant.
Addink, N. W. H.	Spectrochim. Acta 15, 349-359 (1959).	emiss.
Allen, C. W.	Monthly Notices Roy. Astron. Soc. 121, 299-332 (1960).	comm. & CA
Boyarchuk, M. E. & Boyarchuk, A. A.	Akademiia Nauk S.S.S.R. Krymskaia astrofizecheskaia observatoriia. Izvestiia 22, 234-256 (1960) (O.T.P. 1).	comm.
Mitrofanova, L. A.	Pulkovo. Astronomicheskaia observatoriia. Izvestiia 21, 185-189 (1960) (O.T.P. 2).	emiss., rel.
Morozova, N. P. & Startsev, G. P.	Optics and Spectroscopy (U.S.S.R.) 17, 174-176 (1964).	emiss.
Corliss, C. H.	J. Research Nat. Bur. Standards 69A, 87-107 (1965).	comm. & emiss.
Lawrence, G. M., Link, J. K. & King, R. B.	Astrophys. J. 141, 293-307 (1965).	absorpt.
Stewart, J. C. & Rotenberg, M.	Phys. Rev. 140, 1508A-1519A (1965).	quant.
Bell, G. D., Paquette, D. R. & Wiese, W. L.	Astrophys. J. 143,559-572 (1966).	emiss., rel.

Ni II

Ornstein, L. S. & Bouma, T.	Phys. Rev. 36, 679-693 (1930).	emiss., rel.

---

*See also Table 1.

AUTHOR	JOURNAL	CLASSIFICATION
Aller, L. H., Hazen, M., Doherty, L., Grant, G., Jugaku, J., Spiegel, E. & Waddell, J.	Publications of the Observatory, Univ. of Michigan (Feb. 19, 1954).	misc., rel.
Garstang, R. H.	Monthly Notices Roy. Astron. Soc. 118, 234-240 (1958).	quant. forb.
Boyarchuk, M. E. & Boyarchuk, A. A.	Akademiia Nauk S.S.S.R. Krymskaia astrofizecheskaia observatoriia. Izvestiia 22, 234-256 (1960) (O.T.P. 1).	comm.
Groth, H. G.	Z. Astrophys. 51, 231-285 (1961).	misc.
Gruzdev, P. F.	Optics & Spectroscopy (U.S.S.R.) 13, 249-250 (1962).	quant., rel.
Bell, G. D., Paquette, D. R. & Wiese, W. L.	Astrophys. J. 143, 559-572 (1966).	emiss., rel.
Mendlowitz, H.	Astrophys. J. 143, 573-590 (1966).	quant., rel.

Ni III

Garstang, R. H.	Monthly Notices Roy. Astron. Soc. 118, 234-240 (1958).	quant. forb.

Ni XII

Edlén, B.	Z. Astrophys. 22, 30-64 (1942).	quant. forb.
Huang, K.	Astrophys. J. 101, 187-195 (1945).	misc. forb.

Ni XIII

Edlén, B.	Z. Astrophys. 22, 30-64 (1942).	quant. forb.
Huang, K.	Astrophys. J. 101, 187-195 (1945).	misc. forb.

Ni XV

Edlén, B.	Z. Astrophys. 22, 30-64 (1942).	quant. forb.
Huang, K.	Astrophys. J. 101, 187-195 (1945).	misc. forb.

Ni XVI

Edlén, B.	Z. Astrophys. 22, 30-64 (1942).	quant. forb.
Huang, K.	Astrophys. J. 101, 187-195 (1945).	misc. forb.

* * * * *

O (Oxygen)*

O I

AUTHOR	JOURNAL	CLASSIFICATION
Russell, H. N.	Astrophys. J. 78, 239-297 (1933).	ESTIM.
Condon, E. U.	Astrophys. J. 79, 217-234 (1934).	QUANT. FORB.
Bowen, I. S.	Rev. Mod. Phys. 20, 109-112 (1948).	ESTIM.
Petrie, W., Monaghan, P. A. & Dolan, P. A.	Can. J. Research 27A, 213-217 (1949).	QUANT.
Emeleus, K. G., Sayers, N. D. & Bailey, R. A.	Nature 166, 656-657 (1950).	LIFE FORB.
Petrie, W.	J. Geophys. Research 55, 143-151 (1950).	QUANT.
Garstang, R. H.	Monthly Notices Roy. Astron. Soc. 111, 115-124 (1951).	QUANT. FORB.
Sayers, N. D. & Emeleus, K. G.	Proc. Phys. Soc. London A 65, 219-226 (1952).	LIFE FORB. & COMM.
Yamanouchi, T. & Horie, H.	J. Phys. Soc. Japan 7, 52-56 (1952).	QUANT. FORB.
Parker, L. W. & Holmes, J. R.	J. Opt. Soc. Am. 43, 103-109 (1953).	QUANT.
Herman, L. & Herman, R.	"Proceedings of the Conference on Auroral Physics" No. 30, 221-241 (1954).	LIFE FORB.
Jürgens, G.	Z. Physik 138, 613-622 (1954).	EMISS.
Kingsbury, R. F.	Phys. Rev. 99, 1846-1850 (1955).	SCF
Omholt, A. & Harang, L.	J. Atmospheric and Terrest. Phys. 7, 247-253 (1955).	LIFE FORB.
Garstang, R. H.	"The Airglow & the Aurorae", 324-327 (ed. Armstrong & Dalgarno, Pergamon Press, New York, 1956).	QUANT. FORB.
Omholt, A.	J. Atmospheric and Terrest. Phys. 9, 28-35 (1956).	CA & SCF
Omholt, A.	"The Airglow and the Aurorae" 178-182 (ed. Armstrong and Dalgarno, Pergamon Press, New York 1956).	LIFE FORB. & COMM.
Vainshtein, L. A.	Optika i Spektroskopiya 3, 313-321 (1957) (transl.).	QUANT.
Liszka, L. & Niewodńiczański, H.	Acta Phys. Polon. 17, 345-351 (1958).	EMISS. FORB., REL.
Varsavsky, C. M.	Thesis Harvard (1958).	QUANT.
Omholt, A.	Geofys. Publikasjoner Norske Videnskaps-Akad. i Oslo 21, 1-38 (1959).	MISC. & LIFE FORB.
Yutsis, A. P. & Vizbaraite, Ia. I.	Trudy Akademii Nauk Litovskoi S.S.R., Seriia B, 1 (17) 3-15 (1959).	QUANT. FORB.
Bates, D. R.	"Physics of the Upper Atmosphere", 300-302 (ed. Ratcliffe, J. A., Academic Press, New York, 1960).	COMM. FORB.

*See also Table 1.

AUTHOR	JOURNAL	CLASSIFICATION
Bolotin, A. B., Shironas, I. I. & Braiman, M. Yu.	Vilniaus Valstybinio v. Kapsuko vardo universiteto Mokslo Darbai 33, matematika fizika 9, 107-112 (1960).	quant.
Goldberg, L., Müller, E. A. & Aller, L. H.	Astrophys. J. Suppl. Ser. 5, #45, 1-137 (1960).	CA
Omholt, A.	Planetary and Space Science 2, 246-248 (1960).	life forb.
Stoffregen, W. & Derblom, H.	Nature 185, 28-29 (1960).	life forb.
Doherty, L. R.	Thesis Michigan (1961).	emiss.
Garstang, R. H.	Proc. Cambridge Phil. Soc. 57, 115-120 (1961).	quant.
Naqvi, A. M.	Geophysics Corporation of America Technical Report 61-21-A; ASTIA Document 263 459 (1961).	CA
Wiese, W. L. & Shumaker, Jr., J. B.	J. Opt. Soc. Am. 51, 937-942 (1961).	emiss.
Foster, E. W.	Proc. Phys. Soc. London A 79, 94-104 (1962).	emiss.
Solarski, Jr., J. E. & Wiese, W. L.	J. Opt. Soc. Am. 52, 592 (1962).	emiss.
Vainshtein, L. A.	Transactions of the P.N. Lebedev Physics Institute 15, part 1, 1-50 (1962) (CBE-TR).	quant.
Norman, G. E.	Optics and Spectroscopy (U.S.S.R.) 14, 315-317 (1963).	quant.
Buttrey, D. E. & Gibson, J. B.	Technical Documentary Report No. RTD-TDR-63-3047 (1964).	emmss.
Cohen, M. & Dalgarno, A.	Proc. Roy. Soc. London A 280, 258-270 (1964).	quant.
Kelly, P. S.	Astrophys. J. 140, 1247-1268 (1964).	SCF
Kelly, P. S.	J. Quant. Spectrosc. Radiat. Transfer 4, 117-148 (1964).	quant.
Kelly, P. S. & Armstrong, B. H.	Phys. Rev. Letters 12, 35-36 (1964).	SCF
Prag, A. B.	Thesis Univ. of Washington (1964).	misc.
Prag, A. B. & Clark, K. C.	Phys. Rev. Letters 12, 34-35 (1964).	misc.
Solarski, Jr., J. E. & Wiese, W. L.	Phys. Rev. 135, A1236-A1241 (1964).	emiss.
Kelly, P. S., Sokoloff, J. & Armstrong, B. H.	Technical Report No. WL TR-64-172 (1965).	quant.
Morse, T. A. & Kaufman, F.	J. Chem. Phys. 42, 1785-1790 (1965).	absorpt.
Prag, A. B., Fairchild, C. E. & Clark, K. C.	Phys. Rev. 137, A1358-A1363 (1965).	misc.
Paulson, K. V. & Shepherd, G. G.	J. Atmospheric and Terrest. Phys. 27, 831-841 (1965).	misc., forb.
Stewart, J. C. & Rotenberg, M.	Phys. Rev. 140, 1508A-1519A (1965).	quant.

O II

Rubinowicz, A.	Z. Physik 65, 662-676 (1930).	quant., rel.

AUTHOR	JOURNAL	CLASSIFICATION
Russell, H. N.	Astrophys. J. 78, 239-297 (1933).	estim.
Condon, E. U.	Astrophys. J. 79, 217-234 (1934).	quant. forb.
Aller, L. H. & Menzel, D. H.	Astrophys. J. 102, 239-263 (1945).	quant.
Bates, D. R. & Damgaard, A.	Astrophys. J. 107, 383-385 (1948).	SCF
Aller, L. H., Ufford, C. W. & van Vleck, J. H.	Astrophys. J. 109, 42-52 (1949).	quant. forb.
Garstang, R. H.	Astrophys. J. 115, 506-508 (1952).	quant. forb.
Yamanouchi, T. & Horie, H.	J. Phys. Soc. Japan 7, 52-56 (1952).	quant. forb.
Garstang, R. H.	Monthly Notices Roy. Astron. Soc. 114, 118-133 (1954).	quant., rel. & CA
Traving, G.	Z. Astrophys. 36, 1-41 (1955).	CA
Garstang, R. H.	"The Airglow & the Aurorae", 324-327 (ed. Armstrong & Dalgarno, Pergamon Press, New York, 1956).	quant. forb.
Levinson, I. B., Bolotin, A. B. & Levin, L. I.	Trudy Vil'nyusskogo un. 5, 49-55 (1956) (transl.).	quant.
Aller, L. H., Elste, G. & Jugaku, J.	Astrophys. J. Suppl. Ser. 3, #25, 1-35 (1957).	CA
Naqvi, A. M. & Talwar, S. P.	Monthly Notices Roy. Astron. Soc. 117, 463-471 (1957).	quant. forb.
Seaton, M. J. & Osterbrock, D. E.	Astrophys. J. 125, 66-83 (1957).	quant. forb.
Aller, L. H. & Jugaku, J.	Astrophys. J. Suppl. Ser. 4, #38, 109-156 (1959).	CA
Varsavsky, C. M.	Thesis Harvard (1958).	quant.
Mastrup, F. & Wiese, W.	Z. Astrophys. 44, 259-279 (1958).	emiss. rel.
Yutsis, A. P. & Vizbaraite, Ia. I.	Trudy Akademii Nauk Litovskoi S.S.R., Seriia B, 1 (17) 3-15 (1959).	quant. forb.
Bates, D. R.	"Physics of the Upper Atmosphere", 300-302 (ed. Ratcliffe, J. A., Academic Press, New York, 1960).	comm. forb.
Glembotskii, I. I. & Kuzmitskite, L. L.	Trudy Akademii Nauk Litovskoi S.S.R. Seriia B, 1 (21) 87-98 (1960) (O.T.P. 2).	quant.
Naqvi, A. M.	Geophysics Corporation of America Technical Report 61-21-A; ASTIA Document 263 459 (1961).	CA & comm. forb.
Berg, H., Burris, R., Eckerle, K. & Wiese, W. L.	Astrophys. J. 139, 751-757 (1963).	emiss., rel.
Cohen, M. & Dalgarno, A.	Proc. Roy. Soc. London A 280, 258-270 (1964).	quant.
Czyzak, S. J.	Publ. Astron. Soc. Pacific 76, 413-429 (1964).	quant. forb.
Kelly, P. S.	Astrophys. J. 140, 1247-1268 (1964).	SCF
Kelly, P. S.	J. Quant. Spectrosc. Radiat. Transfer 4, 117-148 (1964).	quant.
Froese, C.	Phys. Rev. 137, A1644-A1648 (1965).	SCF

AUTHOR	JOURNAL	CLASSIFICATION
Kelly, P. S., Sokoloff, J. & Armstrong, B. H.	Technical Report No. WL TR-64-172 (1965).	quant.
Stewart, J. C. & Rotenberg, M.	Phys. Rev. 140, 1508A-1519A (1965).	quant.

O III

AUTHOR	JOURNAL	CLASSIFICATION
Stevenson, A. F.	Proc. Roy. Soc. London A 137, 298-325 (1932).	quant. forb.
Condon, E. U.	Astrophys. J. 79, 217-234 (1934).	quant. forb.
Menzel, D. H. & Aller, L. H.	Astrophys. J. 94, 436-448 (1941).	quant.
Aller, L. H.	Astrophys. J. 97, 135-165 (1943).	quant.
Obi, S.	Publ. Astron. Soc. Japan 2, 150-155 (1950).	quant. forb., rel.
Garstang, R. H.	Monthly Notices Roy. Astron. Soc. 111, 115-124 (1951).	quant. forb.
Yamanouchi, T. & Horie, H.	J. Phys. Soc. Japan 7, 52-56 (1952).	quant. forb.
Yilmaz, H.	Phys. Rev. 100, 1148-1153 (1955).	quant. forb.
Bolotin, A. B., Levinson, I. B. & Levin, L. I.	Soviet Phys. - JETP 2, 391-395 (1956).	quant.
Yutsis, A. P. & Vizbaraite, Ia. I.	Trudy Akademii Nauk Litovskoi S.S.R., Seriia B, 1 (17) 3-15 (1959).	quant. forb.
Bates, D. R.	"Physics of the Upper Atmosphere", 300-302 (ed. Ratcliffe, J. A., Academic Press, New York, 1960).	comm. forb.
Berg, H., Burris, R., Eckerle, K. & Wiese, W. L.	Astrophys. J. 139, 751-757 (1963).	emiss., rel.
Cohen, M. & Dalgarno, A.	Proc. Roy. Soc. London A 280, 258-270 (1964).	quant.
Kelly, P. S.	Astrophys. J. 140, 1247-1268 (1964).	SCF
Kelly, P. S.	J. Quant. Spectrosc. Radiat. Transfer 4, 117-148 (1964).	quant.
Froese, C.	Phys. Rev. 137, A1644-A1648 (1965).	SCF
Kelly, P. S., Sokoloff, J. & Armstrong, B. H.	Technical Report No. WL TR-64-172 (1965).	quant.
Stewart, J. C. & Rotenberg, M.	Phys. Rev. 140, 1508A-1519A (1965).	quant.
Osterbrock, D. E.	Astrophys. J. 142, 1423-1430 (1965).	quant. forb.

O IV

AUTHOR	JOURNAL	CLASSIFICATION
Aller, L. H.	Astrophys. J. 97, 135-165 (1943).	quant.
Bolotin, A. B. & Yutsis, A. P.	Zhur. Eksptl. i Teoret. Fiz. 24, 537-543 (1953) (O.T.P. 1).	quant.
Nikitin, A. A. & Yakubovskii, O. A.	Soviet Astronomy-AJ 7, 189-198 (1963).	quant.

AUTHOR	JOURNAL	CLASSIFICATION
Cohen, M. & Dalgarno, A.	Proc. Roy. Soc. London A 280, 258-270 (1964).	quant.
Kelly, P. S.	Astrophys. J. 140, 1247-1268 (1964).	SCF
Kelly, P. S.	J. Quant. Spectrosc. Radiat. Transfer 4, 117-148 (1964).	quant.
Nikitin, A. A. & Yakubovskii, O. A.	Soviet Phys.-Doklady 9, 409-411 (1964).	quant. forb.
Kelly, P. S., Sokoloff, J. & Armstrong, B. H.	Technical Report No. WL TR-64-172 (1965).	quant.
Stewart, J. C. & Rotenberg, M.	Phys. Rev. 140, 1508A-1519A (1965).	quant.
Osterbrock, D. E.	Astrophys. J. 142, 1423-1430 (1965).	quant. forb.

O V

AUTHOR	JOURNAL	CLASSIFICATION
Aller, L. H.	Astrophys. J. 97, 135-165 (1943).	quant.
Bolotin, A. B. & Yutsis, A. P.	Zhur. Eksptl. i Teoret. Fiz. 24, 537-543 (1953) (O.T.P. 1).	quant.
Cohen, M. & Dalgarno, A.	Proc. Roy. Soc. London A 280, 258-270 (1964).	quant.
Kelly, P. S.	Astrophys. J. 140, 1247-1268 (1964).	SCF
Kelly, P. S.	J. Quant. Spectrosc. Radiat. Transfer 4, 117-148 (1964).	quant.
Kelly, P. S., Sokoloff, J. & Armstrong, B. H.	Technical Report No. WL TR-64-172 (1965).	quant.
Pfennig, H., Steele, P. & Trefftz, E.	J. Quant. Spectrosc. Radiat. Transfer 5, 355-347 (1965).	SCF

O VI

AUTHOR	JOURNAL	CLASSIFICATION
Kantseriavichius, A.	Litovskii Fizicheskii Sbornik 2, 245-257 (1962).	quant.
Cohen, M. & Dalgarno, A.	Proc. Roy. Soc. London A 275, 492-503 (1963).	quant.
Flannery, M. R. & Stewart, A. L.	Monthly Notices Roy. Astron. Soc. 126, 387-392 (1963).	quant.
Varsavsky, C. M.	Planetary and Space Science 11, 1001-1014 (1963).	quant.
Weiss, A. W.	Astrophys. J. 138, 1262-1276 (1963).	SCF
Cohen, M. & Dalgarno, A.	Proc. Roy. Soc. London A 280, 258-270 (1964).	quant.
Kelly, P. S.	Astrophys. J. 140, 1247-1268 (1964).	SCF
Kelly, P. S.	J. Quant. Spectrosc. Radiat. Transfer 4, 117-148 (1964).	quant.
Berkner, K. H., Cooper III, W. S., Kaplan, S. N. & Pyle, R. V.	Phys. Letters 16, 35-36 (1965).	life
Kelly, P. S., Sokoloff, J. & Armstrong, B. H.	Technical Report No. WL TR-64-172 (1965).	quant.

AUTHOR	JOURNAL	CLASSIFICATION
	O VII	
Kantseriavichius, A.	Litovskii Fizicheskii Sbornik 2, 245-257 (1962).	quant.
	* * * * *	
	P (Phosphorus)*	
	P I	
Czyzak, S. J. & Krueger, T. K.	Monthly Notices Roy. Astron. Soc. 126, 177-194 (1963).	quant. forb.
	P II	
Jugaku, J., Sargent, L. W. & Greenstein, J. L.	Astrophys. J. 134, 783-796 (1961).	CA
Czyzak, S. J. & Krueger, T. K.	Monthly Notices Roy. Astron. Soc. 126, 177-194 (1963).	quant. forb.
	P III	
Nikitin, A. A. & Yakubovskii, O. A.	Soviet Phys.-Doklady 9, 409-411 (1964).	quant. forb.
	P XI	
Nikitin, A. A. & Yakubovskii, O. A.	Soviet Phys.-Doklady 9, 409-411 (1964).	quant. forb.
	* * * * *	
	Pb (Lead)*	
	Pb I	
Mrozowski, S.	Phys. Rev. 58, 1086-1093 (1940).	emiss. forb., rel.
Gerjuoy, E.	Phys. Rev. 60, 233-240 (1941).	quant. forb.
Jenkins, F. A. & Mrozowski, S.	Phys. Rev. 60, 225-233 (1941).	emiss. forb., rel.

*See also Table 1.

AUTHOR	JOURNAL	CLASSIFICATION
Engler, H. D.	Z. Physik 144, 343-353 (1956).	absorpt.
Allen, C. W.	Monthly Notices Roy. Astron. Soc. 117, 622-628 (1957).	comm.
Allen, C. W. & Asaad, A. S.	Monthly Notices Roy. Astron. Soc. 117, 36-49 (1957).	emiss.
Khokhlov, M. Z.	Akademiia Nauk S.S.S.R. Krymskaia astrofizecheskaia observatoriia. Izvestiia 21, 84-102 (1959) (O.T.P. 1).	emiss., rel.
Bell, G. D. & King, R. B.	Astron. J. 65, 483 (1960).	absorpt.
Khokhlov, M. Z.	Akademiia Nauk S.S.S.R. Krymskaia astrofizecheskaia observatoriia. Izvestiia 22, 118-127 (1960) (O.T.P. 2).	absorpt. & emiss.
Khokhlov, M. Z.	Akademiia Nauk S.S.S.R. Krymskaia astrofizecheskaia observatoriia. Izvestiia 22, 128-133 (1960) (O.T.P. 2).	emiss.
Bell, G. D. & King, R. B.	Astrophys. J. 133, 718-722 (1961).	absorpt.
Helliwell, T. M.	Astrophys. J. 133, 566-571 (1961).	quant.
Khokhlov, M. Z.	Akademii Nauk S.S.S.R. Krymskaia astrofizicheskaia observatoriia. Izvestiia 25, 249-267 (1961).	emiss., rel. & absorpt., rel.
Khokhlov, M. Z.	Akademiia Nauk S.S.S.R. Krymskaia astrofizicheskaia observatoriia. Izvestiia 26, 52-62 (1961).	quant.
Khokhlov, M. Z.	Akademiia Nauk S.S.S.R. Krymskaia astrofizicheskaia observatoriia. Izvestaia 29, 131-140 (1963).	comm.
Penkin, N. P. & Slavenas, I. Yu. Yu.	Optics and Spectroscopy (U.S.S.R.) 15, 83-88 (1963).	hook
Brown, W. A.	Thesis Univ. of Michigan (1964).	emiss.
Novick, R., Perry, B. W. & Saloman, E. B.	Bull. Am. Phys. Soc. II 9, 625 (1964).	misc.
Saloman, E. B.	Bull. Am. Phys. Soc. 11, 10, 49 (1965).	misc.

Pb II

AUTHOR	JOURNAL	CLASSIFICATION
Brown, W. A.	Thesis Univ. of Michigan (1964).	emiss.

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Pd (Palladium)*

Pd I

AUTHOR	JOURNAL	CLASSIFICATION
Lawrence, G. M., Link, J. K. & King, R. B.	Astrophys. J. 141, 293-307 (1965).	absorpt.

*See also Table 1.

Rb (Rubidium)*

Rb I

AUTHOR	JOURNAL	CLASSIFICATION
Bleeker, C. E.	Thesis Utrecht (1928).	emiss., rel.
Prokof'ev, V. K.	Z. Physik 57, 387-393 (1929).	hook forb., rel.
Stevenson, A. F.	Proc. Roy. Soc. London A 128, 591-599 (1930).	quant. forb.
Prokof'ev, V. K.	Zhur. Eksptl. i Teoret. Fiz. 1, 123-127 (1931) (O.T.P. 1).	hook forb., rel.
Rubinowicz, A. & Blaton, J.	Ergeb. exakt. Naturw. 11, 176-217 (1932).	comm.
Ornstein, L. S. & Key, J.	Physica 1, 945-952 (1934).	comm., rel.
Prokof'ev, V. K. & Shtandel, G.	Zhur. Eksptl. i Teoret. Fiz. 4, 359-367 (1934) (O.T.P. 1).	hook, rel.
Heierman, J. H.	Thesis Utrecht (1937).	emiss.
Key, J.	Thesis Utrecht (1937).	emiss., rel.
Stephenson, G.	Nature 167, 112 (1951).	misc.
Stephenson, G.	Proc. Phys. Soc. London A 64, 458-464 (1951).	misc.
Meyer-Berkhout, U.	Z. Physik 141, 185-197 (1955).	misc.
Yanoukh, F.	Vestnik Leningrad Univ. Ser. Fiz. i Khim. 10, 135-142 (1955) (O.T.P. 2).	quant. rel.
Gol'dberg, G. I.	Pulkovo. Atronomicheskaia observatoriia. Izvestiia 20, 126-137 (1956) (O.T.P. 1).	hook & SCF
Heavens, O. S.	J. Opt. Soc. Am. 51, 1058-1061 (1961).	CA
Naqvi, A. M.	Geophysics Corporation of America Technical Report 61-21-A; ASTIA Document 263 459 (1961).	CA
Anderson, E. M. & Zilitis, V. A.	Optics and Spectroscopy (U.S.S.R.) 16, 211-214 (1963).	quant.
Feldman, P. & Novick, R.	Phys. Rev. 11, 278-281 (1963).	life
Hertzberg, M. & Holland, R.	J. Quant. Spectrosc. Radiat. Transfer 5, 313-320 (1965).	emiss., rel.

Rb II

Petersen, R.	Phys. & Chem. Solids 1, 284 (1957).	quant., rel.

* * * * *

Rn (Radon)*

Rn II

Edlén, B.	Phys. Rev. 65, 248 (1944).	quant. forb.

*See also Table 1.

AUTHOR	JOURNAL	CLASSIFICATION
	Ru (Ruthenium)*	
	Ru I	
Goldberg, L., Müller, E. A. & Aller, L. H.	Astrophys. J. Suppl. Ser. 5, #45, 1-137 (1960).	CA
	* * * * *	
	S (Sulphur)*	
	S I	
Bowen, I. S.	Rev. Mod. Phys. 20, 109-112 (1948).	estim. forb.
Osterbrock, D. E.	Astrophys. J. 114, 469-472 (1951).	quant. forb.
Goldberg, L., Müller, E. A. & Aller, L. H.	Astrophys. J. Suppl. Ser. 5, #45, 1-137 (1960).	CA
Czyzak, S. J. & Krueger, T. K.	Monthly Notices Roy. Astron. Soc. 126, 177-194 (1963).	quant. forb.
	S II	
Condon, E. U.	Astrophys. J. 79, 217-234 (1934).	quant. forb.
Garstang, R. H.	Astrophys. J. 115, 506-508 (1952).	quant. forb.
Garstang, R. H.	Monthly Notices Roy. Astron. Soc. 114, 118-133 (1954).	quant., rel. & CA
Naqvi, A. M. & Talwar, S. P.	Monthly Notices Roy. Astron. Soc. 117, 463-471 (1957).	quant. forb.
Aller, L. H. & Jugaku, J.	Astrophys. J. Suppl. Ser. 4, #38, 109-156 (1959).	CA
Gaustad, J. E. & Spitzer, Jr., L.	Astrophys. J. 134, 771-776 (1961).	estim.
Czyzak, S. J. & Krueger, T. K.	Monthly Notices Roy. Astron. Soc. 126, 177-194 (1963).	quant. forb.
Czyzak, S. J.	Publ. Astron. Soc. Pacific 76, 413-429 (1964).	quant. forb.
	S III	
Gaustad, J. E. & Spitzer, Jr., L.	Astrophys. J. 134, 771-776 (1961).	estim.
Czyzak, S. J. & Krueger, T. K.	Monthly Notices Roy. Astron. Soc. 126, 177-194 (1963).	quant. forb.

*See also Table 1.

AUTHOR	JOURNAL	CLASSIFICATION
	S IV	
Gaustad, J. E. & Spitzer, Jr., L.	Astrophys. J. 134, 771-776 (1961).	estim.
Nikitin, A. A. & Yakubovskii, O. A.	Soviet Phys.-Doklady 9, 409-411 (1964).	quant. forb.
	S XI	
Nikitin, A. A. & Yakubovskii, O. A.	Soviet Phys.-Doklady 9, 409-411 (1964).	quant. forb.
	* * * * *	
	Sc (Scandium)*	
	Sc I	
Ostrovskii, Yu. I. & Penkin, N. P.	Optika i Spektroskopiya 3, 391-393 (1957) (transl.).	hook, rel.
Mitrofanova, L. A.	Pulkovo. Atronomicheskaia observatoriia. Izvestiia 21, #162, 159-161 (1958) (transl.).	emiss., rel.
Allen, C. W.	Monthly Notices Roy. Astron. Soc. 121, 299-332 (1960).	comm. & CA
Goldberg, L., Müller, E. A. & Aller, L. H.	Astrophys. J. Suppl. Ser. 5, #45, 1-137 (1960).	CA
Stewart, J. C. & Rotenberg, M.	Phys. Rev. 140, 1508A-1519A (1965).	quant.
	Sc II	
Wilson, O. C.	Astrophys. J. 107, 126-150 (1948).	misc., rel.
Aller, L. H., Hazen, M., Doherty, L., Grant, G., Jugaku, J., Spiegel, E. & Waddell, J.	Publications of the Observatory, Univ. of Michigan (Feb. 19, 1954).	misc., rel.
Mitrofanova, L. A.	Pulkovo. Atronomicheskaia observatoriia. Izvestiia 21, #162, 159-161 (1958) (transl.).	emiss., rel.
Boyarchuk, M. E. & Boyarchuk, A. A.	Akademiia Nauk S.S.S.R. Krymskaia astrofizecheskaia observatoriia. Izvestiia 22, 234-256 (1960) (O.T.P. 1).	comm.
Groth, H. G.	Z. Astrophys. 51, 231-285 (1961).	misc.

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*See also Table 1.

AUTHOR	JOURNAL	CLASSIFICATION

Sc IX

Nikitin, A. A. & Yakubovskii, O. A.	Soviet Phys.-Doklady 9, 409-411 (1964).	quant. forb.

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Se (Selenium)*

Se II

Boyarchuk, M. E. & Boyarchuk, A. A.	Akademiia Nauk S.S.S.R. Krymskaia astrofizecheskaia observatoriia. Izvestiia 22, 234-256 (1960) (O.T.P. 1).	comm.

* * * * *

Si (Silicon)*

Si I

Russell, H. N.	Astrophys. J. 78, 239-297 (1933).	estim.
Allen, C. W.	Monthly Notices Roy. Astron. Soc. 117, 622-628 (1957).	comm.
Allen, C. W. & Asaad, A. S.	Monthly Notices Roy. Astron. Soc. 117, 36-49 (1957).	emiss.
Varsavsky, C. M.	Thesis Harvard (1958).	quant.
Addink, N. W. H.	Spectrochim. Acta 15, 349-359 (1959).	emiss.
Hey, P.	Z. Physik 157, 79-88 (1959).	emiss.
Boyarchuk, M. E. & Boyarchuk, A. A.	Akademiia Nauk S.S.S.R. Krymskaia astrofizecheskaia observatoriia. Izvestiia 22, 234-256 (1960) (O.T.P. 1).	comm.
Goldberg, L., Müller, E. A. & Aller, L. H.	Astrophys. J. Suppl. Ser. 5, #45, 1-137 (1960).	CA
Vidale, G. L.	ASTIA Document 239 281 (1960).	absorpt.
Khokhlov, M. Z.	Akademiia Nauk S.S.S.R. Krymskaia astrofizicheskaia observatoriia. Izvestiia 26, 52-62 (1961).	quant.
Garstang, R. H. & Dawe, J. A.	The Observatory 82, 210-211 (1962).	quant.
Khokhlov, M. Z.	Akademiia Nauk S.S.S.R. Krymskaia astrofizicheskaia observatoriia. Izvestiia 29, 131-140 (1963).	emiss., rel., absorpt., rel. & comm.

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*See also Table 1.

AUTHOR	JOURNAL	CLASSIFICATION
Slavenas, I. Yu. Yu.	Optics and Spectroscopy (U.S.S.R.) 16, 214-216 (1964).	hook, rel.
Niewoniczański, H. & Pietruszka, J.	Acta Phys. Polon. 27, 807-813 (1965).	emiss. forb., rel.

Si II

Russell, H. N.	Astrophys. J. 78, 239-297 (1933).	estim.
Biermann, L.	Nachr. Akad. Wiss. Göttingen, Math-Physik. Kl. 116-118 (1946-1948).	SCF
Bates, D. R. & Damgaard, A.	Astrophys. J. 107, 383-385 (1948).	SCF
Biermann, L. & Lübeck, K.	Z. Astrophys. 25, 325-339 (1948).	SCF
Aller, L. H., Hazen, M., Doherty, L., Grant, G., Jugaku, J., Spiegel, E. & Waddell, J.	Publications of the Observatory, Univ. of Michigan (Feb. 19, 1954).	misc., rel.
Varsavsky, C. M.	Thesis Harvard (1958).	quant.
Hey, P.	Z. Physik 157, 79-88 (1959).	emiss.
Boyarchuk, M. E. & Boyarchuk, A. A.	Akademiia Nauk S.S.S.R. Krymskaia astrofizecheskaia observatoriia. Izvestiia 22, 234-256 (1960) (O.T.P. 1).	comm.
Jugaku, J., Sargent, L. W. & Greenstein, J. L.	Astrophys. J. 134, 783-796 (1961).	CA
Nikitin, A. A. & Yakubovskii, O. A.	Soviet Phys.-Doklady 9, 409-411 (1964).	quant. forb.

Si III

Russell, H. N.	Astrophys. J. 78, 239-297 (1933).	estim.
Aller, L. H. & Jugaku, J.	Astrophys. J. Suppl. Ser. 4, #38, 109-156 (1959).	CA
Gaustad, J. E. & Spitzer, Jr., L.	Astrophys. J. 134, 771-776 (1961).	comm. & estim.

Si IV

Russell, H. N.	Astrophys. J. 78, 239-297 (1933).	estim.
Rudkjobing, M.	Publications of the Copenhagen Observatory No. 145, 74-82 (1947).	quant.
Traving, G.	Z. Astrophys. 36, 1-41 (1955).	CA
Gaustad, J. E. & Spitzer, Jr., L.	Astrophys. J. 134, 771-776 (1961).	comm. & estim.

AUTHOR	JOURNAL	CLASSIFICATION
Houziaux, L. & Sadoine, M. P.	Bull. soc. roy. sci. Liége 30, 287-299 (1961).	CA
Douglas, A. S. & Garstang,	Proc. Cambridge Phil. Soc. 58, 377-381 (1962).	SCF
Houziaux, L.	Bulletin de la classe des Sciences Acad. Roy de Belgique 49, 356-361 (1963).	CA
Kisiel, A.	Acta Phys. Polon. 23, 167-175 (1963).	emiss., rel.
Stewart, J. C. & Rotenberg, M.	Phys. Rev. 140, 1508A-1519A (1965).	quant.

Si X

AUTHOR	JOURNAL	CLASSIFICATION
Garstang, R. H.	Ann. astrophys. 25, 109-117 (1962).	quant. forb. & CA
Nikitin, A. A. & Yakubovskii, O. A.	Soviet Phys.-Doklady 9, 409-411 (1964).	quant. forb.

* * * * *

Sn (Tin)*

Sn I

AUTHOR	JOURNAL	CLASSIFICATION
Allen, C. W.	Monthly Notices Roy. Astron. Soc. 117, 622-628 (1957).	comm.
Allen, C. W. & Asaad, A. S.	Monthly Notices Roy. Astron. Soc. 117, 36-49 (1957).	emiss.
Prokof'ev, V. K., Nagibina, I. M. & Petrova, G. P.	Optics & Spectroscopy (U.S.S.R.) 8, 195-197 (1960).	emiss.
Khokhlov, M. Z.	Akademii Nauk S.S.S.R. Krymskaia astrofizecheskaia observatoriia. Izvestiia 25, 249-267 (1961).	emiss., rel. & absorpt., rel.
Khokhlov, M. Z.	Akademiia Nauk S.S.S.R. Krymskaia astrofizecheskaia observatoriia. Izvestiia 26, 52-62 (1961).	quant.
Khokhlov, M. Z.	Akademiia Nauk S.S.S.R. Krymskaia astrofizecheskaia observatoriia. Izvestiia 28, 277-287 (1962).	absorpt., rel.
Khokhlov, M. Z.	Akademiia Nauk S.S.S.R. Krymskaia astrofizecheskaia observatoriia. Izvestiia 29, 131-140 (1963).	emiss., rel., absorpt., rel. & comm.
Penkin, N. P. & Slavenas, I. Yu. Yu.	Optics and Spectroscopy (U.S.S.R.) 15, 83-88 (1963).	hook
Lawrence, G. M., Link, J. K. & King, R. B.	Astrophys. J. 141, 293-307 (1965).	absorpt.

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*See also Table 1.

Sr (Strontium)*

Sr I

AUTHOR	JOURNAL	CLASSIFICATION
Kerschbaum, H.	Ann. Physik 83, 287-295 (1927).	canal
Prokof'ev, V. K.	Z. Physik 50, 701-715 (1928).	hook, rel.
Prokof'ev, V. K.	Zhur. Eksptl. i Teoret. Fiz. 1, 111-122 (1931) (O.T.P. 1).	hook, rel.
Kast, W.	Z. Physik 79, 731-735 (1932).	emiss., rel.
Chamalan, F. J.	Thesis Utrecht (1934).	emiss., rel. & quant., rel.
King, G. W. & van Vleck, J. H.	Phys. Rev. 56, 464-465 (1939).	quant. forb., rel.
Schuttevaer, J. W.	Thesis Utrecht (1942).	emiss., rel.
Schuttevaer, J. W., de Bont, M. J. & van den Broek, Th. H.	Physica 10, 544-552 (1943).	emiss., rel.
Kruithof, A. M.	Physica 11, 129-143 (1944).	estim.
Eberhagen, A.	Z. Physik 143, 392-411 (1955).	emiss.
Mannkopff, R.	Experim. Techn. d. Physik. Sonderheft Spektroskopie 44-50 (1955).	comm.
Mitrofanova, L. A.	Pulkovo. Astronomicheskaia observatoriia. Izvestiia 20, #159, 52-54 (1958) (O.T.P. 1).	emiss., rel.
Ostrovskii, Yu. I., Penkin, N. P. & Shabanova, L. N.	Bull. Acad. Sci. U.S.S.R. Phys. Ser. 22, 720-724 (1958).	hook
Ostrovskii, Yu. I., Penkin, N. P. & Shabanova, L. N.	Soviet Phys.-Doklady 3, 538-540 (1958).	hook
Addink, N. W. H.	Spectrochim. Acta 15, 349-359 (1959).	emiss.
Ostrovskii, Yu. I. & Penkin, N. P.	Optics and Spectroscopy (U.S.S.R.) 11, 307-309 (1961).	hook & comm.
Penkin, N. P. & Shabanova, L. N.	Optics and Spectroscopy (U.S.S.R.) 12, 1-5 (1962).	hook
Vainshtein, L. A. & Poluektov, I. A.	Optics and Spectroscopy (U.S.S.R.) 12, 254-257 (1962).	quant., rel.
Helliwell, T. M.	Thesis California Institute of Technology (1963).	quant.
Naqvi, A. M.	Conference on Opacity, Albuquerque, N.M., April 8 & 9, Geophysics Corporation of America, Bedford, Massachusetts.	quant.
Helliwell, T. M.	Phys. Rev. 135, A325-A331 (1964).	quant.
Hulpke, E., Paul, E. & Paul, W.	Z. Physik 177, 257-268 (1964).	life
Lurio, A., de Zafra, R. L. & Goshen, R. J.	Phys. Rev. 134, A1198-A1203 (1964).	misc.

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*See also Table 1.

AUTHOR	JOURNAL	CLASSIFICATION
Naqvi, A. M.	J. Quant. Spectrosc. Radiat. Transfer 4, 597-615 (1964).	quant.
Penkin, N. P. & Shabanova, L. N.	Optics and Spectroscopy (U.S.S.R.) 18, 535-537 (1965).	comm.

Sr II

AUTHOR	JOURNAL	CLASSIFICATION
Kruithof, A. M. & Smit, J. A.	Physica 11, 129-143 (1944) (transl.).	estim.
Nikonova, E. I. & Prokof'ev, V. K.	Optika i Spektroskopiya 1, 290-297 (1956) (transl.).	hook, rel.
Dvornikova, I. U. & Nagibina, I. M.	Optika i Spektroskopiya 4, 421-429 (1958) (O.T.P.2).	emiss., rel.
Mitrofanova, L. A.	Pulkovo. Astronomicheskaia observatoriia. Izvestiia 20, #159, 52-54 (1958) (O.T.P. 1).	emiss., rel.
Ostrovskii, Yu. I. & Penkin, N. P.	Optics and Spectroscopy (U.S.S.R.) 10, 3-6 (1961).	hook
Ostrovskii, Yu. I. & Penkin, N. P.	Optics and Spectroscopy (U.S.S.R.) 11, 307-309 (1961).	comm.
Roberts, T. G. & Hales, W. L.	U. S. Army Missile Command Redstone Arsenal, Alabama, Report No. RR-TR-62-8 (1962).	CA
Bialas-Zabawa, A., Skulska, E. & Walach, Z.	Acta Phys. Polon. 26, 175-183 (1964).	quant., rel.

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Th (Thorium)*

Th II

AUTHOR	JOURNAL	CLASSIFICATION
Chiplis, I. V. & Ushpalis, K. K.	Trudy Akademii Nauk Litovskoi S.S.R. Seriia B, 2 (25) 31-39 (1961) (O.T.P. 2).	quant.
Chiplis, I. V. & Ushpalis, K. K.	Fiz. Probl. Spektroskopii, Akad. Nauk S.S.S.R., Materily 13-Go (Trinadtsatago) Soveshch., Leningrad p. 21-23 (1962).	quant.

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Ti (Titanium)*

Ti I

AUTHOR	JOURNAL	CLASSIFICATION
Frerichs, R.	Ann. Physik 81, 807-845 (1926).	emiss., rel.

*See also Table 1.

AUTHOR	JOURNAL	CLASSIFICATION
Harrison, G. R.	J. Opt. Soc. Am. 17, 389-416 (1928).	emiss., rel.
Harrison, G. R. & Engwicht, H.	J. Opt. Soc. Am. 18, 287-301 (1929).	emiss., rel.
King, R. B. & King, A. S.	Astrophys. J. 87, 24-39 (1938).	absorpt., rel.
van Stekelenburg, L. H. M.	Thesis Utrecht (1943).	emiss., rel.
Petrie, W.	Can. J. Research A 25, 42-48 (1947).	comm.
Rohrlich, F.	Phys. Rev. 74, 1381-1396 (1948).	quant.
van Stekelenburg, L. H. M. & Smit, J. A.	Physica 14, 189-196 (1948).	emiss., rel.
Mitrofanova, L. A.	Pulkovo. Astronomicheskaia observatoriia. Izvestiia 19, #153, 107-111 (1955) (O.T.P. 1).	emiss., rel. emiss., rel.
Ostrovskii, Yu. I., Parchevskii, G. F. & Penkin, N. P.	Optika i Spektroskopiya 1, 821-832 (1956) (OTS transl. 62 15508) (AD 266 653).	hook, rel.
Addink, N. W. H.	Spectrochim. Acta 15, 349-359 (1959).	emiss.
Allen, C. W.	Monthly Notices Roy. Astron. Soc. 121, 299-332 (1960).	comm. & CA
Boyarchuk, M. E. & Boyarchuk, A. A.	Akademiia Nauk S.S.S.R. Krymskaia astrofizecheskaia observatoriia. Izvestiia 22, 234-256 (1960) (O.T.P. 1).	comm.
Hefferlin, R., Cobb, B., Hall, D. & Lehman, C.	Astrophys. J. 132, 259-263 (1960).	emiss., rel.
Tatum, J. B.	Monthly Notices Roy. Astron. Soc. 122, 311-324 (1961).	emiss., rel.
Morozova, N. P. & Startsev, G. P.	Optics and Spectroscopy (U.S.S.R.) 17, 174-176 (1964).	emiss.
Stewart, J. C. & Rotenberg, M.	Phys. Rev. 140, 1508A-1519A (1965).	quant.

Ti II

Harrison, G. R.	J. Opt. Soc. Am. 17, 389-416 (1928).	emiss., rel.
King, R. B.	Astrophys. J. 94, 27-29 (1941).	absorpt., rel.
van Stekelenburg, L. H. M.	Thesis Utrecht (1943).	emiss., rel.
Petrie, W.	Can. J. Research A 25, 42-48 (1947).	comm.
Wilson, O. C.	Astrophys. J. 107, 126-150 (1948).	misc., rel.
van Stekelenburg, L. H. M. & Smit, J. A.	Physica 14, 189-196 (1948).	emiss., rel.
Aller, L. H., Hazen, M., Doherty, L., Grant, G., Jugaku, J., Spiegel, E. & Waddell, J.	Publications of the Observatory, Univ. of Michigan (Feb. 19, 1954).	misc., rel.
Mitrofanova, L. A.	Pulkovo. Astronomicheskaia observatoriia. Izvestiia 19, #153, 107-111 (1955) (O.T.P. 1).	emiss., rel. emiss., rel.
Varsavsky, C. M.	Thesis Harvard (1958).	quant.

AUTHOR	JOURNAL	CLASSIFICATION
Boyarchuk, M. E. & Boyarchuk, A. A.	Akademiia Nauk S.S.S.R. Krymskaia astrofizecheskaia observatoriia. Izvestiia 22, 234-256 (1960) (O.T.P. 1).	comm.
Rountree, J. C.	Ann. astrophys. 23, 633-654 (1960) (transl.).	comm.
Houziaux, L. & Sadoine, M. P.	Bull. soc. roy. sci. Liege 30, 287-299 (1961).	CA
Tatum, J. B.	Monthly Notices Roy. Astron. Soc. 122, 311-324 (1961).	emiss., rel.
Aller, L. H.	Univ. of Michigan, Dept. of Astronomy Technical Note #3 (1962).	misc.
Wobig, K. H.	Z. Astrophysik 55, 100-109 (1962).	emiss.

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Tl (Thallium)*

Tl I

AUTHOR	JOURNAL	CLASSIFICATION
Kuhn, W.	Naturwissenschaften 13, 724-726 (1925).	misc.
Kuhn, W.	Kgl. Danske Videnskab. Selskab Mat.-fys. Medd. 7, 1-86 (1926).	misc.
Prokof'ev, V. K. & Solov'ev, V. N.	Z. Physik 48, 276-285 (1928).	hook, rel.
Filippov, A. N. & Prokof'ev, N. K.	Z. Physik 85, 647-660 (1933).	hook
Prokof'ev, V. K. & Filippov, A. N.	Zhur. Eksptl. i Teoret. Fiz. 4, 31-42 (1933) (O.T.P. 1).	hook, rel.
Müller, F.	Helv. Phys. Acta 7, 488-491 (1934).	absorpt.
Müller, F.	Helv. Phys. Acta 7, 813-840 (1934).	absorpt.
Müller, F.	Helv. Phys. Acta 8, 152-164 (1935).	absorpt.
Kvater, G. S.	Zhur. Eksptl. i Teoret. Fiz. 5, 426-439 (1935) (O.T.P. 1).	hook, rel.
Kvater, G. S.	Physik. Z. Sowjetunion 7, 226 (1935).	hook, rel.
Kvater, G. S.	Zhur. Eksptl. i Teoret. Fiz. 11, 421-439 (1941).	hook
Kvater, G. S.	Zhur. Eksptl. i Teoret. Fiz. 11, 440-447 (1941).	comm.
Kvater, G. S.	J. Phys. U.S.S.R. 6, 145-162 (1942).	hook
Kvater, G. S.	J. Phys. U.S.S.R. 6, 210-217 (1942).	comm.
Kvater, G. S.	Vestnik Leningrad Univ. Ser. Fiz. i Khim. No. 2, 135-141 (1947) (O.T.P. 1).	hook
Stephenson, G.	Nature 167, 112 (1951).	misc.
Stephenson, G.	Proc. Phys. Soc. London A 64, 458-464 (1951).	misc.
Marr, G. U.	Proc. Roy. Soc. London A 224, 83-90 (1954).	absorpt.

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*See also Table 1.

AUTHOR	JOURNAL	CLASSIFICATION
Nikonova, E. I. & Prokof'ev, V. K.	Optika i Spektroskopiya 1, 290-297 (1956) (transl.).	hook, rel.
Hinnov, E. & Kohn, H.	J. Opt. Soc. Am. 47, 156-162 (1957).	emiss.
Gurvich, L. V.	Optika i Spektroskopiya 5, 205-207 (1958) (O.T.P. 1).	comm.
Vainshtein, L. A.	Bull. Acad. Sci. U.S.S.R. Phys. Ser. 22, 668-669 (1958).	SCF & comm.
Brehm, B., Demtröder, W. & Osberghaus, O.	Z. Naturforsch. 16a, 843 (1961).	life
Demtröder, W.	Thesis Bonn (1961).	life
Hanus, W.	Bull. acad. polon. sci. Classe 3, 8, 629-636 (1961).	quant.
Tolans, E. L. & Lurio, A.	Bull. Am. Phys. Soc. (2) 6, 75 (1961).	misc.
Demtröder, W.	Z. Physik 166, 42-55 (1962).	life
Korolev, F. A. & Odintsov, A. I.	Fiz. Probl. Spektroskopii, Akad. Nauk S.S.S.R., Materialy 13-Go (Trinadtsatago) Soveshch., Leningrad p. 67-69 (1962).	incompl.
Penkin, N. P. & Shabanova, L. N.	Optics and Spectroscopy (U.S.S.R.) 14, 87-88 (1963).	hook
Gallagher, A. & Lurio, A.	Phys. Rev. 136, A87-A105 (1964).	misc.
Series, G. W. & Gough, W.	Acta Phys. Polon. 26, 345-351 (1964).	misc.
Gough, W. & Series, G. W.	Proc. Phys. Soc. London A 85, 469-479 (1965).	misc.
Lawrence, G. M., Link, J. K. & King, R. B.	Astrophys. J. 141, 293-307 (1965).	absorpt.
Penkin, N. P. & Shabanova, L. N.	Optics and Spectroscopy (U.S.S.R.) 18, 535-537 (1965).	comm.

Tl II

Knox, R. S. & Dexter, D. L.	Phys. Rev. 104, 1245-1252 (1956).	estim., rel.
Helliwell, T. M.	Thesis California Institute of Technology (1963).	quant.
Helliwell, T. M.	Phys. Rev. 135, A325-A331 (1964).	quant.

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V (Vanadium)*

V I

Frerichs, R.	Ann. Physik 81, 807-845 (1926).	emiss., rel.
King, R. B.	Astrophys. J. 105, 376-389 (1947).	absorpt., rel.

*See also Table 1.

AUTHOR	JOURNAL	CLASSIFICATION
Righini, G.	Mem. soc. astron. ital. 19-20, 303-311 (ed Allen, C. W., University Press, Princeton, 1948-1949) (transl.).	misc., rel.
Ostrovskii, Yu. I. & Penkin, N. P.	Optika i Spektroskopiya 5, 345-353 (1958) (O.T.P.1).	hook, rel.
Addink, N. W. H.	Spectrochim. Acta 15, 349-359 (1959).	emiss.
Allen, C. W.	Monthly Notices Roy. Astron. Soc. 121, 299-332 (1960).	comm. & CA
Boyarchuk, M. E. & Boyarchuk, A. A.	Akademiia Nauk S.S.S.R. Krymskaia astrofizecheskaia observatoriia. Izvestiia 22, 234-256 (1960) (O.T.P. 1).	comm.
Morozova, N. P. & Startsev, G. P.	Optics and Spectroscopy (U.S.S.R.) 17, 174-176 (1964).	emiss.
Stewart, J. C. & Rotenberg, M.	Phys. Rev. 140, 1508A-1519A (1965).	quant.

V II

AUTHOR	JOURNAL	CLASSIFICATION
Wilson, O. C.	Astrophys. J. 107, 126-150 (1948).	misc., rel.
Aller, L. H., Hazen, M., Doherty, L., Grant, G., Jugaku, J., Spiegel, E. & Waddell, J.	Publications of the Observatory, Univ. of Michigan (Feb. 19, 1954).	misc., rel.
Boyarchuk, M. E. & Boyarchuk, A. A.	Akademiia Nauk S.S.S.R. Krymskaia astrofizecheskaia observatoriia. Izvestiia 22, 234-256 (1960) (O.T.P. 1).	comm.
Groth, H. G.	Z. Astrophys. 51, 231-285 (1961).	misc.

V III

AUTHOR	JOURNAL	CLASSIFICATION
Zhvironaite, S. A., Konstantinavichius, K. V., & Rakauskas, R. I.	Litovskii Fizicheskii Sbornik 2, 17-31 (1962).	SCF
Mendlowitz, N.	Astrophys. J. 138, 1277-1296 (1963).	quant., rel.

V XIII

AUTHOR	JOURNAL	CLASSIFICATION
Stewart, J. C. & Rotenberg, M.	Phys. Rev. 140, 1508A-1519A (1965).	quant.

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AUTHOR	JOURNAL	CLASSIFICATION
	Xe (Xenon)*	
	Xe I	
Petersen, R.	Phys. & Chem. Solids 1, 284 (1957).	quant., rel.
Statz, H., Tang, C. L. & Koster, G. F.	J. Appl. Phys. 34, 2625-2632 (1963).	quant., rel.
Tang, C. L.	Proceedings of the IEEE 51, 219 (1963).	quant., rel.
Faust, W. L. & McFarlane, R. A.	J. Appl. Phys. 35, 2010-2015 (1964).	quant., rel.
Anderson, D. K.	Phys. Rev. 137, A21-A26 (1965).	misc.
Malakhov, V. P.	Izvestiia Uysshikh Uchebnykh Zavedenii Fizika 8, 180 (1965).	incompl.
	Xe II	
Edlén, B.	Phys. Rev. 65, 248 (1944).	quant. forb.
	Xe III	
Edlén, B.	Phys. Rev. 65, 248 (1944).	quant. forb.
Osterbrock, D. E.	Astrophys. J. 114, 469-472 (1951).	quant. forb.
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	Y (Yttrium)*	
	Y I	
Goldberg, L., Müller, E. A. & Aller, L. H.	Astrophys. J. Suppl. Ser. 5, #45, 1-137 (1960).	CA
	Y II	
Boyarchuk, M. E. & Boyarchuk, A. A.	Akademiia Nauk S.S.S.R. Krymskaia astrofizecheskaia observatoriia. izvestiia 22, 234-256 (1960) (O.T.P. 1).	comm., rel.
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*See also Table 1.

Zn (Zinc)*

Zn I

AUTHOR	JOURNAL	CLASSIFICATION
Prokof'ev, V. K.	Z. Physik 50, 701-715 (1928).	estim.
Larche, K.	Z. Physik 67, 440-477 (1931).	misc., rel.
Prokof'ev, V. K.	Zhur. Eksptl. i Teoret. Fiz. 1, 111-122 (1931) (O.T.P. 1).	estim.
Filippov, A. N.	Physik. Z. Sowjetunion 1, 289-296 (1932).	hook, rel.
Filippov, A. N.	Trudy Gosudarst. Opt. Inst. Leningrad 8, #77, 1-8 (1932) (O.T.P. 1).	hook, rel.
Soleillet, P.	Compt. rend. 195, 372-373 (1932) (transl.).	misc.
Russell, H. N.	Astrophys. J. 78, 239-297 (1933).	estim.
Billeter, W.	Helv. Phys. Acta 7, 505-513 (1934).	absorpt.
Billeter, W.	Helv. Phys. Acta 7, 841-842 (1934).	comm.
Soleillet, P.	Compt. rend. 204, 253-255 (1937).	absorpt.
Ausländer, J.	Helv. Phys. Acta 11, 562-586 (1938).	absorpt.
Mason, R. C.	Physica 5, 777-783 (1938).	emiss., rel.
Bruck, H.	Compt. rend. 208, 1805-1807 (1939) (transl.).	misc.
King, G. W. & van Vleck, J. H.	Phys. Rev. 56, 464-465 (1939).	quant. forb., rel.
Bruck, H.	Thesis Paris (1942) (transl.).	misc.
Bruck, H.	Compt. rend. 214, 307-309 (1942) (transl.).	misc.
Schuttevaer, J. W.	Thesis Utrecht (1942).	emiss., rel.
Schuttevaer, J. W. & Smit, J. A.	Physica 10, 502-512 (1943).	emiss., rel.
Schuttevaer, J. W., de Bont, M. J. & van den Broek, Th. H.	Physica 10, 544-552 (1943).	emiss., rel.
Spitzer, M.	Compt. rend. 239, 696-698 (1954) (transl.).	misc.
Geneux, E. & Wanders-Vincenz, B.	Helv. Phys. Acta 33, 185-220 (1960) (transl.).	misc.
May, A. D.	Compt. rend. 250, 3616-3617 (1960) (transl.).	misc.
May, A. D.	Compt. rend. 251, 1371-1372 (1960) (transl.).	misc.
Penkin, N. P. & Red'ko, T. P.	Optics and Spectroscopy (U.S.S.R.) 9, 360 (1960).	hook, rel. & emiss., rel.
Leś, Z. & Niewodniczański, H.	Acta Phys. Polon. 20, 701-714 (1961).	emiss., rel.
Garstang, R. H.	J. Opt. Soc. Am. 52, 845-851 (1962).	quant.
Vainshtein, L. A. & Poluektov, I. A.	Optics and Spectroscopy (U.S.S.R.) 12, 254-257 (1962).	quant., rel.
Helliwell, T. M.	Thesis California Institute of Technology (1963).	quant.

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*See also Table 1.

AUTHOR	JOURNAL	CLASSIFICATION
Kornalewski, T. & Niewodniczański, H.	Acta Phys. Polon. 24, 601-609 (1963).	emiss. rel.
Helliwell, T. M.	Phys. Rev. 135, A325-A331 (1964).	quant.
Lurio, A., de Zafra, R. L. & Goshen, R. J.	Phys. Rev. 134, A1198-A1203 (1964).	misc.

Zn II

Russell, H. N.	Astrophys. J. 78, 239-297 (1933).	estim.
Bruck, H.	Compt. rend. 208, 1805-1807 (1939) (transl.).	misc.
Geneux, E. & Wanders-Vincenz, B.	Phys. Rev. Letters 3, 422-423 (1959).	misc.
Geneux, E. & Wanders-Vincenz, B.	Helv. Phys. Acta 33, 185-220 (1960) (transl.).	misc.

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Zr (Zirconium)*

Zr I

Goldberg, L., Müller, E. A. & Aller, L. H.	Astrophys. J. Suppl. Ser. 5, #45, 1-137 (1960).	CA

Zr II

Boyarchuk, M. E. & Boyarchuk, A. A.	Akademiia Nauk S.S.S.R. Krymskaia astrofizecheskaia observatoriia. izvestiia 22, 234-256 (1960) (O.T.P. 1).	comm., rel.
Houziaux, L. & Sadoine, M. P.	Bull. soc. roy. sci. Liége 30, 287-299 (1961).	CA

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*See also Table 1.

4. PARTIAL LIST OF ABBREVIATIONS

For convenience complete titles for the abbreviations of sparsely circulated journals and addresses for translating services are listed.

AEC-TR	Atomic Energy Commission English translation
Arch. néerl. sci. 3A	Archives néerlandaises des sciences exactes et naturelles. Series 3A
ASTIA Document (AD)	Armed Services Technical Information Agency Document
ATS (transl.)	English translation available from: Associated Technical Services, Inc. P. O. Box 271, East Orange, New Jersey
Bull. acad. polon. sci. Classe 3	Bulletin de l'académie polonaise des sciences. Classe 3
Bull. soc. roy. sci. Liége	Bulletin de la société royale des sciences de Liége
Mem. soc. astron. ital.	Memorie della società astronomica italiana
Mém. soc. roy. sci. Liége	Mémoires de la société royale des sciences de Liége
Münch. tierärztl. Wochschr.	Münchener tierärztliche Wochenschrift
O.T.P. 1	1. "Optical Transition Probabilities" 1924-1960 (National Science Foundation, Washington, D. C., and Department of Commerce by the Israel Program for Scientific Translations, Jerusalem, 1962).
O.T.P. 2	2. "Optical Transition Probabilities" 1932-1962 (National Science Foundation, Washington, D. C., and Department of Commerce by the Israel Program for Scientific Translations, Jerusalem, 1963).
SLA-RT	English translation available from: SLA Translation Monthly, The John Crerar Library, 35 West 33rd Street, Chicago 16, Illinois

Selected Publications of the National Bureau of Standards

Atomic Energy Levels, C. E. Moore:

Circular 467, Volume I. H to V (Z=1 to 23) 206 spectra. 309 p. (1949).	$5.50
Circular 467, Volume II. Cr to Nb (Z=24 to 41) 152 spectra. 227 p. (1952).	$4.00
Circular 467, Volume III. Mo to La (Z=42 to 57) Hf to Ac (Z=72 to 89) 124 spectra. 245 p. (1958).	$3.00

An Ultraviolet Multiplet Table, C. E. Moore:

Circular 488, Section 1. H to V (Z=1 to 23); Selected Multiplets of 79 Spectra. 78 p. (1950). Combined with section 2.	
Circular 488, Section 2. Cr to Nb (Z=24 to 41); Selected Multiplets of 46 Spectra. 115 p. (1952).	$1.25
Circular 488, Section 3. Mo to La (Z=42 to 57) Hf to Ra (Z=72 to 88) Selected Multiplets of 78 Spectra. 94 p. (1961).	$0.60
Circular 488, Section 4. H to Nb (Z=1 to 41); Finding List for Sections 1 and 2 of the Table. 65 p. (1961).	$0.45
Circular 488, Section 5. Mo to La (Z=42 to 57) Hf to Ra (Z=72 to 88) Finding List for Section 3 of the Table. 30 p. (1961).	$0.30

Table of Wavenumbers, C. D. Coleman, W. R. Bozman, and W. F. Meggers:

Monograph 3, Volume I. 2000A to 7000A. 508 p. (1960).	$6.00
Monograph 3, Volume II. 7000A to 1000μ. 542 p. (1960).	$6.00

New Description of Thorium Spectra, Romuald Zalubas:

Monograph 17, 106 p. (1960).	$0.65

Tables of Spectral-Line Intensities, W. F. Meggers, C. H. Corliss, and B. F. Scribner:

Monograph 32, Part I. Arranged by Elements. 474 p. (1961).	$4.00
Monograph 32, Part II. Arranged by Wavelengths. 272 p. (1961).	$3.00

Selected Tables of Atomic Spectra, C. E. Moore:

Atomic Energy Levels and Multiplet Tables—Si II, Si III, Si IV. National Standard Reference Data Series—National Bureau of Standards 3—Section 1. 32 p. (1965).	$0.35

The above publications may be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C., 20402.

A Multiplet Table of Astrophysical Interest, C. E. Moore. A Reprinting of the 1945 Multiplet Table (Princeton Univ., Obs. Contr. No. 20):

Technical Note 36 (PB151395), Part I Table of Multiplets, and Part II Finding List, λλ2951Å–13164Å. 242 p. (1959).	$4.00

The above Technical Note may be purchased by the PB number from the Clearinghouse for Federal Scientific and Technical Information, 5285 Port Royal Road, Springfield, Va., 22151.

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